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CLINICAL INVESTIGATION: PHYSICIAN AND PATIENT

THE NINTH ALPHA OMEGA ALPHA ANNUAL LECTURE

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I plan to consider only certain aspects of clinical investigation especially referable to the physician and patient—thoughts about which have been fermenting in my mind for several years—rather than to present an exposition on all phases of the subject.

The medical student is trained by university education to use his own mind and to do his own thinking. Moreover, so long as he is active in medicine he must continue his education and constantly sharpen his powers of observation and judgment. At the bedside this attitude is essential. Doctors deal with human problems. To solve human problems, an active creative imagination and scientific curiosity are necessary tools. Such qualities are needed by the physician not because every doctor is expected to conduct investigations leading to new knowledge but rather because every patient who consults a doctor presents a problem for investigation before the best advice can be offered. Thus basically each practitioner of medicine is a clinical investigator, though research is not the sine qua non in making a clinician. The physician becomes inefficient and nonprogressive unless he is inspired by imagination and the curiosity to learn. It is important, therefore, that he should appreciate the spirit and understand the principles of research, and also develop an investigative habit of mind. These attributes must be applied at the bedside in the elucidation of the phenomena of disease. There is another goal that must be kept in mind. Since medicine deals so essentially in human problems, the physician must constantly strive to broaden his outlook on life, and he may do this by cultivating interests that may appear extracurricular to the practice of medicine.

WHERE UNDERTAKEN

Clinical investigation may be pursued in institutions designed only for that purpose or in any hospital. It may also be undertaken in offices for private practice. The establishment of laboratories and opportunities for clinical investigation in large hospitals where the study of patients under controlled conditions can be undertaken seems especially wise. On the one hand it surrounds the investigators with a wealth of clinical material for study which offers opportunity for the origination of ideas and, on the other hand, it plays an important rôle in maintaining the hospital as a modern institution and permits patients to receive the very best treatment. There is nowhere that a patient stands so good a chance of being benefited as in a clinic where his disease is arousing scientific curiosity. The large general hospital that does not deliberately, wholeheartedly and intensively further the development of research or keep up with progress soon becomes one that goes backward.

To many persons the word laboratory implies a place where test tubes and complicated apparatus are employed to satisfy intellectual curiosity. The clinical investigative laboratory is not of that order, for wards with patients are the salient feature. The sick individual is the center of the picture. It is from the patients' problems that clinical investigations originate and these are not confined within the walls of a building. Indeed, clinical investigation goes far beyond the hospital grounds or doctor's office, because solutions to a given problem may be found at a distance; for example, in the social or economic aspects of the country, the community or the home. Although technical apparatus may be required for the proper care of the patient and for intelligent observation to promote the welfare of mankind, it is the least significant feature of clinical investigation. The most valued and most impressive possession of a clinical investigative unit, besides the sick people, is the accumulated records containing consecutive data often largely obtained by simple procedures and frequently entirely by the use of the intellect. One of the important methods of science is to create detailed trustworthy records of natural phenomena. It is from such information that concepts regarding the nature, treatment and prevention of disease are formulated and lead to the establishment of useful new knowledge. The foundation of such work lies in the quality of the minds of the staff and the freedom and tranquillity permitted for the use of their abilities. Free choice of problems and free choice to follow leads disclosed must be the privilege of the investigator.

THE MAN

The term clinical investigator is usually thought of as being applied to a man who devotes a considerable amount of time to the study of clinical problems in organized clinical laboratories. A man may devote his life to problems pertaining to the clinic but essentially never observe a patient. Such an individual, invaluable to the progress of medicine, may work, for example, in a laboratory of experimental medicine or in a chemical or physiologic laboratory, but for purposes of discussion here I do not refer to such an individual as a clinical investigator.

The William W. Root Lecture of Alpha Omega Alpha Honor Medical Society, read at the annual meeting in Atlantic City, N. J., June 13, 1935.

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A trained clinical investigator may mean a different type of individual to different people. Broadly speaking, it seems to me that there are two types of clinical investigators and that the distinction between them has not been well understood. The first is the experienced clinician who seeks tools through which to solve problems that originate in his mind at the bedside; for example, the man who observes in several patients an abnormal color of the skin and decides that, as an aid to determine its cause, chemical procedures must be utilized. The second also may have clinical training, but he is the trained technician who takes his tools to the bedside to apply them to problems he may be interested in; for example, a man trained in chemistry who seeks a patient that he believes will elucidate the mechanism of pigment formation. The former is more truly the clinical investigator, and it is by the intellectual rather than by the technical method that he approaches his problems. In any event the investigator must fertilize his plots with carefully tested mixtures of thought and knowledge gleaned from experience, books and journals, suggestions from colleagues and eternal painstaking study. He should have as his ideal the ambition to be the best possible man in his chosen field and, among other qualifications, he must be industrious, alert, and able to progress by use of constructive imagination.

Both types of clinical investigator have their place in the development of useful knowledge and can profitably be found in the same hospital unit. However, if aggregations of individuals chosen only because they are acquainted with special technics form the personnel of a clinical investigative unit, the practical needs of clinical medicine are apt to be forgotten. Likewise, the type of man more interested, for example, in chemistry than in the patient will not be as valuable to the hospital's total interests, including the patients and students therein, as the type of man who is chosen because of his clinical ability, scientific curiosity and an aptitude to formulate clinical problems and to foresee a way to solve them.

There is a strange fascination about research, which in the past quarter century has tended to make it a fashionable undertaking for the young physician. Remember, however, that a doctor should choose the field that will bring him happiness and should never pursue a career in the spirit of "it's the thing they all do." Much time has been wasted by men attempting things for which they have neither qualification nor training. Practitioners have suffered by believing they were research workers and good investigators have been lost to the world by their trying to become general practitioners. A man with an active medical practice, however, can contribute importantly to medicine although often lack of time and the character of his interests prevents or interrupts investigative studies. It is, indeed, the practitioner with limited practice—hospital or otherwise—who often becomes the most successful trained clinical investigator. The problem lies in the man himself rather than in his precise occupation; he needs to have a desire for adventure, a collecting or acquisitive spirit and a craving to learn about the unknown. He who undertakes clinical investigation, however, must learn to recognize clinical facts and never jeopardize the patients' health. He must establish a detailed diagnosis as rapidly as possible and not let science encourage him to waste time over unessential details but proceed to action for every aspect of the patient and his case. Training in investigative ways most assuredly leads to better clinical work, although some men who have spent much time in research laboratories or wards become poor practitioners. This is not the fault of the laboratory but the fault of the man himself. He must see to it that he receives proper training as a clinician.

Besides what is gained by investigative work itself, this type of work has a large educational value. Throughout life the physician must keep abreast of the times, and he should be surrounded by associates from whom he can constantly imbibe knowledge. An understanding of the principles of investigative work can lead him to judge critically, to appreciate the nature and significance of proper controls and to distinguish the chaff from the wheat of medical papers. Every physician must be trained to look at problems from numerous angles and be unwilling to confine himself to standardized procedures, no matter how successful they may be in contemporary industrial life. Mass production cannot be used in medical service. As each bit of information is added to the sum of human knowledge it is evident that it is the little things that count; that give all the fertility and character, all the hope and happiness, to human affairs.

THE STUDIES

Clinical investigation takes a variety of forms, and much work properly belonging under that title would not be called research in the strictest sense of that term. The aim should be, however, to undertake fundamental problems and to appreciate that progress in the clinic may owe its origin to the fields of pure science. Sir Thomas Lewis has written on the scope and methods of clinical science and considers that work in this field consists of studying diseases as diseases or as some manifestation of disease that several diseases have in common. Therapeutics is essentially an experimental science and will always have experimentation on man for its chief basis. It is linked with pharmacology; and a clinical investigator may find that he is, at least for his own purposes, the best pharmacologist. Many clinical investigative studies are of a simple routine collective nature, such as the analysis of clinical data, the evaluation of new procedures or the correlation of clinical and chemical or pathologic studies. A complete study of a case and the literature concerning it, with some special observations followed by a carefully written report, as Herrick has said, will do much to clarify the doctor's own knowledge and may help clarify knowledge for some one else. Such work sharpens powers of observation and tends to prevent conclusions based on mere impressions and leads to obtaining facts.

Descriptions of heretofore unrecognized conditions often depend on the good fortune of observing several cases and not on planned investigation. Collecting proper information over long periods of time so as to formulate knowledge of prognosis, which in many chronic conditions is imperfect, represents a simple type of investigation. There is need for more accurate work of this sort to formulate rules to forecast the patient's future. The question of the origin or cause of disease is of unusual importance to the clinical investigator and may require intricate and complicated studies. A catalogue of the varieties of studies which the clinical investigator may pursue will be long and of little value. It is more significant to realize that important original contributions are made which require only simple technic and clinical wisdom. To be sure, complicated apparatus and specialized knowledge may be needed to solve

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problems arising at the bedside, but it seems that frequently the clinical investigator advances knowledge by discovery of the new with simple technic.

Often the clinical investigator can study his problem by methods at his command, but he may find it necessary to seek out a particular technic or assistance from a wide variety of such divergent sources as botanic and sociological ones. The university investigators are apt to ask for advice from within one or another department of their own or other universities. There are, however, other sorts of institutions, such as industrial plants, where investigators seek, and more and more often will seek, advice and make progress by cooperation. The aim in these different sorts of laboratories is basically the same; namely, to search for truth regarding the laws of nature.

The present century has seen far-reaching organization and endowment of medical research, including units for the care of the patient, clinical investigation and teaching, which has influenced clinical medicine in important ways. Partly as a result of these developments, team work is much more general and prolific where before isolated efforts were the rule. This scheme of events has made it possible to undertake clinical investigation on a broader scale and to attack problems that formerly were impossible for one man to undertake alone. Artificial barriers between different fields of knowledge have handicapped science and art. This inherited tradition is fortunately being broken down, and one of the ways that should lead to the great advances of the future is the cooperative investigation of physicians, scientists and all types of scholars trained in different ways and in different sorts of institutions. For example, important knowledge has been obtained by the joint studies of engineers and physicians concerning the prevention of disease and for enhancing contentment in industry, and by chemist and clinician in the therapy of disease. Such cooperation when spontaneous is fruitful but when compelled may be sterile.

There are types of clinical investigation that demand organized study by institutions so that data can become available over many years and generations before final analysis is made; for example, creative work to determine the exact qualitative and quantitative influence of dietary factors alone or in combination with one another under varying climatic environment on the influence of thought and social life. The history of the people of this world could perhaps be written in terms of diet, as Zinsner has done in terms of epidemics. Initiative, progress, success and the happiness of a people tend to go hand in hand with an abundance of food and a good diet.

THE INVESTIGATION OF SOCIOLOGICAL CONDITIONS

The physician must have a deep interest in human beings; an interest in their economic and social structure as well as in their physical and psychic state. The clinical investigator is apt to be successful somewhat in proportion to his appreciation of the sick man as an individual. A considerable fraction of the successful care and treatment of patients, and undoubtedly the prevention of much illness, is to be identified with the proper consideration of the social, economic, psychologic and allied factors. More attention by clinicians to the investigation of problems concerning such matters would be of great value; work requiring investigators trained in various fields pertaining to the medical, social and mental aspects of human beings. The diagnosis of the person is too often neglected when diagnosis of the case is made in detail. Careful study and formulation and extension of knowledge concerning the medicosocial aspects of cases is what is needed rather than leaving these matters to haphazard abilities or to individual interests. The field is a difficult one for reliable scientific study because it involves all the complications of human life. The science dealing with the relation between human behavior and health is in its infancy, and the progressive physician should attempt to advance medical knowledge in that direction as much as he has advanced that concerning organic disease within the past quarter century.

The medicosocial aspects of cases or the social component of medicine concern various fields of knowledge. Physicians for generations have been aware that the daily problems of life affect the health and happiness of individuals and have written on such topics. Even so they have not perhaps investigated these problems as often as have social case workers, psychologists, industrial experts, political scientists and clergymen. Although each has a contribution to make, the physician should do more; he, especially, is in a position to comprehend all aspects of an individual. He daily makes contacts with human beings whom the social environment has affected adversely, and to aid them he must know how readjustment can be made. Tact and personality play an important rôle, but an acquaintance with the stream of world thought and the actions of human beings are valuable when treating patients intensively and completely. The physician must understand what Smollett, in Humphry Clinker, first described well —indeed, it had scarcely been attempted before; namely, the different effects which the same scenes, persons and transactions have on different tempers. He must be a student of men and never forget the uniqueness of each human being if he is to be intelligent in the care of the sick. The many important matters that affect the checkered lot of mankind are not to be obtained in books only, but in the study of mankind. It is in the study of the fields of social science that the hope lies of making life better and happier, and the physician should do his share by increasing his investigative activities in this direction.

The late John Candler Cobb has defined social science as "the analysis and study of human relations and the forces that affect the development of civilization." Scientific methods applied with skill, concentration and proper facilities must be employed. The absence at present of definite "yard sticks" to measure factors to be studied is a handicap, but all sciences started with deductive reasoning from observation and developed first along the lines of qualitative methods and have gradually worked toward quantitative methods with the resultant tendency toward exactness. Psychology is essential to social science, for sociological and economic problems cannot be solved without psychologic data. Psychologists often give opinions, but quantitatively stated data are what is needed. The scientific method of approach to the problems of social science and the development of quantitative data will do much toward solving many difficulties with which the world finds itself at the present time and which, in turn, affect not only the doctor but the patient whom he must help.

Today the doctor may become a statesman in a wide field of activity and have great influential power. By and large he has been slow in studying the medicosocial aspects of cases and applying such knowledge

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skilfully, and now he finds that he should become acquainted with a variety of problems arising in social science. Medical economic problems of various sorts such as that creature "State Medicine," not yet satisfactorily defined or analyzed, and health insurance, as well as the relation of medicine and the doctor to modern sociological trends are matters requiring better knowledge, more thought and less passionate discussions. Perhaps a type of trained clinical investigator working at such problems from the physician's point of view will aid to bring divergent opinions into line by means of scientific methods with quantitative data.

Man in all his manifold relations will remain the center of thought and action for the physician, no matter whether he is or is not a clinical investigator.

A PHASE OF LIFE, EXEMPLIFIED BY BOOKS AND NATURAL HISTORY

In my introductory remarks I mentioned that it was an asset to the physician to broaden his outlook on life. I now plan to comment on a phase of life of value for anybody in spite of the fact that this may seem irrelevant. There are a myriad of ways by which the physician, whether a clinical investigator or not, may broaden his mental horizon by activities outside the sphere of modern medicine. Specialization has been carried so far that it has caused a perverted view of life in some minds. A doctor should try to lead a complete life and not confine his thoughts to narrow fields. Indeed, it is often from other fields of knowledge than medicine that useful information is obtained to aid patients and to investigate their problems. The mind cannot always be consciously directed to definite ends. The ability to relax the tension of work is as important as the power of concentration, for the two processes combine in doing progressive work. Relaxation, when the mind follows its own bent, may be a significant period in life. Hobbies of various kinds, I believe, have their value to aid relaxation. They also may train the powers of observation. The collecting habit is common among medical men and they carry that spirit into their professional work.

Miscellaneous information acquired casually may not be of practical value, but it can serve for enrichment of thought. In these modern days of hurry there is a tendency to forget to reserve time for thought and relaxation. It seems to me that it is advantageous to see to it that there is time for what may be called informative extracurricular purposes throughout life. This time may not be measured in terms of accomplishment and certainly not in dollars, but it can be evaluated by some measure that is applicable to making life fuller and richer. As William Lyon Phelps has said, "the happiest person is the person who thinks the most interesting thoughts." Examples from every field and type of knowledge and experience could be cited showing that interests external to pure modern medicine can be of value to the physician. I will not only illustrate by remarks on books and natural history but also present a few thoughts on these subjects, because physicians often take a deep interest in such matters.

Books aid one to deal with the world of men. One may read for information, for refreshment or for enrichment by browsing at will. Literature and essays are a storehouse of the richest human interest. There is varied enjoyment and never-failing instruction regarding man. The works of Dickens and Stevenson and such essays as those of Montaigne, Sir John Lubbock and Hamilton Wright Mabie certainly help in the understanding of patients. To read John Locke's essay "Some Thoughts Concerning Education" and come across the paragraphs concerning constipation, or "costiveness" as he calls it, allows one to wonder why the excellent rules regarding the treatment and prevention of this condition, which he so well set forth in the seventeenth century, are not practiced more often. If one then reads "A Dialogue between a Bilious Patient and a Physician," written by James Henry in 1838, one wishes one could persuade all human beings to grasp and follow the salient facts described in these books. Well known books must form the background of one's reading, but how fascinating it is to "discover" books off the "beaten path" that are appealing. Consider the anonymous "Essay on Laughter wherein are Displayed its Natural and Moral Causes with the Arts of Exciting it," published in London (translated from the French) in 1769; or consider the book by the apothecary Richard Browne, which appeared in 1729, entitled "A Mechanical Essay on the Effects of Singing, Music and Dancing on Human Bodies." The influence of these pleasures on health, folly and, as the authors remark, on "the cure of diseases," would be worthy perhaps of more modern scientific investigation than they have received. The essays on "The Art of Living Long," first published in Padua in 1558 and written by the Venetian Luigi Cornaro, who died in 1566 in his 103d year, indicate, as Benjamin Franklin wrote, "against diseases known the strongest fence is the defensive virtue, abstinence." The basic thoughts expressed by Cornaro regarding diet might have stimulated certain investigative studies by scientific methods long before they were undertaken, and even in recent years thoughts about these essays have suggested problems for clinical study.

Biography and history, including that concerning medicine, serve for orientation and perspective and is stimulating along many lines. There is always something corresponding in our own lives to be found in history. Whether one reads about the life of Sylvius of Leyden (1614-1672) and learns how he first introduced bedside teaching, or about the life of a statesman or any other human being, one will become a better student of man from the experience.

Reading the works of past masters of medicine increases respect for accomplishments made without the aid of modern equipment or knowledge, and from them much useful information may be learned. Records made long ago may suggest investigations appropriate for today. It is remarkable how frequently one can find fragmentary and sometimes fairly complete information that has not been expanded or adequately utilized for generations. For example, Cartier's description of the cure of scurvy in the sixteenth century, Robert Boyle's comments on specific medicines in the seventeenth century, the experiences with cod liver oil and John Huxham's observations pertaining to blood clot retraction in the late eighteenth century, and the early references to the influence of diet on anemia. The history of the development of medical thought and of scientific discoveries can teach something about methods of thought and deduction and serve for the proper orientation of modern problems. To read about the keen observations leading to the early descriptions of disease excites admiration and can be a factor in arousing one to develop the use of one's own eyes. Books of many varieties on natural history can also help train one to observe, but one must learn to observe by studying nature, not only books.

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The power to see straight is a rare gift. To see no more and no less than is actually before one, to see with one's reason as well as with one's perceptions—that is to be an observer and to read the book of nature aright. Many people may walk through fields and woods and see nothing; others may see every conceivable activity of plants, insects and birds. The physician who enjoys natural history will find that, like books, it broadens his horizon and permits interpretation into his professional career. Observe an azalea bush, which normally thrives in acid soil, develop chlorosis, a condition leading to pale leaves and attributable to certain elements not being absorbed by the roots. Watching the "anemia" disappear on rendering the soil more acid, so the proper elements can be absorbed by the plant, can lead to observations concerning the effect of the hydrogen ion concentration of the intestinal contents on iron absorption in patients with anemia. Of course, all biologic knowledge becomes of value to mankind and the clinical investigator can frequently be assisted by the biologist; but the pleasure and ideas he may receive by being fond of all that nature creates has its independent advantages.

To know the butterflies, their habits and instincts can give one enjoyment. The dietary habits of caterpillars and the influence of climatic factors on the development of butterflies can carry suggestions regarding the optimal mixtures of food for man. Some caterpillars are polyphagous and others will starve to death if they are not supplied with just what they want, which not infrequently is a single species or genus of plant. The size of a butterfly may vary with but slight changes in climate. For example, the brown-yellow-silver spotted butterflies of the genus Argyinnis are prone to be smaller on the islands a few miles off the coast of Maine than on the neighboring mainland, and this cannot be attributed to want of food. As pointed out by Samuel H. Scudder nearly fifty years ago, the butterflies of America often have more broods in a year than the butterflies of Europe. The reverse is never true. There are very few butterflies common to the two continents. The painted lady (Vanessa cardui) butterfly is an example with two broods, and I believe occasionally three broods in America, but with never more than one brood in Europe. The comparison of the annual histories of similar European and American butterflies furnishes an instance of that intensity which characterizes all life in America. In Europe there is a tendency to proceed with less haste; in America we bend with nervous energy to our work and play. This aspect of our lives was correlated years ago with climatic differences, and in recent times studies by several men have shown how the more rapid and wider barometric oscillations in America can be correlated with certain features of the make-up of Americans.

Watching the changing distribution of insects locally or nationally permits one to reflect on similar phenomena referable to human disease. A most striking change in the distribution of two butterflies of this continent has taken place in the last seventy-five years. In 1860 the now common white cabbage butterfly, Pieris rapae, was introduced from Europe. By 1871 it appeared all over New England and further introductions were made in various parts of this country. Now this insect is found in every part of North America and usually in great profusion. This imported butterfly has affected a native species, Pieris olerocea, which it resembles, so that whereas it used to be very common in New England it is now exceedingly rare and found only in a few local mountainous regions.

CONCLUSION

In presenting some aspects of clinical investigation I have rambled from university education far afield across the domains of the clinician, the psychiatrist, the economist and other specialists to the world of insects. Even so I have not described a precise procedure for the training of a clinical investigator, because such a man cannot be made by any rule of thumb. The best sort of properly trained clinical investigator must be an able clinician, one with wide interests who understands human beings and can act wisely for all the multiple aspects of a given individual. He also must have an ardent desire to seek for knowledge by scientific methods and wish to carry the torch forward so that the next investigator will find it nearer the ultimate goal.

EXPLOSIVE GASES FORMED DURING ELECTROTRANSURETHRAL RESECTIONS

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Among the accidents that have been reported incident to the use of high frequency currents in transurethral prostatic resections are ruptures of the bladder attributable to explosions within the organ.[1] Doubtless similar explosions resulting only in damage to the bladder mucosa are not uncommon.[2]

The present investigation was undertaken with a view to determining whether the evolution of an explosive gas usually accompanies the use of high frequency currents in such resections and, if so, at what rate the gas is evolved, its composition, and how the danger of explosion may be minimized.

In experiments on a series of twelve dogs there was produced in every instance a gaseous mixture which, in the absence of oxygen from external sources, was not explosive but became highly explosive on the addition of the proper proportion of oxygen or air. When such mixtures were exposed directly to the arc from the resection apparatus they invariably exploded inside the bladder as well as in glass tubes constructed for the purpose. The violence of the explosion was sufficient to give a loud report when it took place in the exposed bladder, but in the healthy bladders of the dogs used no ruptures were produced. In one instance, 2 cc. of the gas mixed with air exploded in a pyrex tube inverted over water with such force that the tube was dislodged from the buret clamp in which it was held and shattered against the ceiling of the laboratory.

The idea that the gas might be produced by electrolysis at once presented itself, but when the rate at which it was evolved was measured it became evident that, even were we dealing with a direct current, electrolysis would have been much slower with the amperage used. Under favorable conditions approximately

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1. Kretschmer, H. L.: Intravesical Explosions as a Complication of Transurethral Electroresection: Report of Two Cases, J. A. M. A. **103**: 1144 (Oct. 13) 1934.
2. Cassuto, A.: J. d'urol. **22**: 263 (Oct.) 1926.

1 cc. of gas per second was obtained with a current not exceeding 500 milliamperes. (By favorable conditions is meant that there is a considerable arcing.) Either cutting or coagulating current may be used effectively.

Since it appeared that the gases were derived from thermal decomposition of the tissues, the experiments were repeated on a smaller series of dogs, an ordinary heat cautery at high temperature being used for the resections. By this method a gaseous mixture with the same explosive properties was obtained. Quantitative differences in the composition of the mixture may be explained by differences in temperature produced by the use of the two types of instruments.

EXPERIMENT

The bladder in old male dogs under morphine and amytal anesthesia was exposed through a suprapubic incision. The cautery was introduced into the urethra through an incision in the perineum. A series of cuts was made into the prostate and the gas that passed into the bladder was drawn off from time to time by means of a needle thrust through the wall of the organ or by means of a cannula fastened in the dome of the bladder. In bladders that offered much resistance to distention the latter arrangement proved more satisfactory, as less gas was lost by escaping through the urethra.

Range of Percentage Values of Various Gases

Name of Gas	When Using High Frequency Current		When Using Heat Cautery	
	Low	High	Low	High
Carbon dioxide	6.2	14.9	12.8	14.2
Oxygen	2.0	5.1	0.2	1.6
Acetylene	1.0	2.2	2.1	2.6
Ethylene	Trace	1.0	2.3	12.8
Carbon monoxide	9.4	27.6	25.1	31.4
Hydrogen	37.5	58.9	20.0	43.8
Residual inert gas	12.3	17.3	14.2	17.7

The gas thus collected was analyzed for carbon dioxide, oxygen, acetylene, ethylene, higher sulphuric acid-soluble hydrocarbons, carbon monoxide and hydrogen in the order named. The absorbents used for the various gases were: for carbon dioxide, a 33 per cent solution of potassium hydroxide; for oxygen, a solution obtained by mixing one volume of a 22 per cent solution of pyrogallic acid with five volumes of 60 per cent potassium hydroxide; for acetylene, a 20 per cent solution of mercuric cyanide in 2 normal sodium hydroxide; for ethylene, a solution made by dissolving 20 Gm. of mercuric nitrate in 100 cc. of 2 normal nitric acid and saturating this solution with sodium nitrate; for higher unsaturated hydrocarbons, concentrated sulphuric acid; for carbon monoxide, a solution prepared by the addition of one volume of ammonium hydroxide solution (specific gravity 0.91) to three volumes of a saturated solution of cuprous chloride in 25 per cent ammonium chloride.[3] Hydrogen was determined by the use of a colloidal palladium solution stabilized with acacia and containing a small amount of sodium picrate.[4]

All of these gases, with the exception of the higher sulphuric acid-soluble hydrocarbons, were found to be present in varying proportions. In addition there remained a considerable amount of inert gas, presumably nitrogen, and a little more than a trace of some gas or gases that yielded carbon dioxide on burning. The burning was accomplished by mixing the gas remaining after the analysis with some hydrogen and an excess of oxygen and then exploding the mixture.

The accompanying table shows the highest and lowest percentage values obtained from the analysis of various samples of gas from different dogs.

COMMENT

The unexpected presence of oxygen in the mixture containing such readily oxidizable gases as carbon monoxide, hydrogen and acetylene is understandable when it is recalled that the composition of the tissue being decomposed varies continuously during the cauterization. During the stages when an excess of oxygen is evolved the oxidizable gases are in all probability burned to carbon dioxide, which is always present in considerable amount. As the gases are formed they pass to the dome of the bladder and are thus removed from the field of action, so that combustible gases evolved during other stages of the decomposition become mixed with the oxygen after having passed from the vicinity of the cautery. This does not necessarily mean that the gas evolved during the early stages of the resection differs in any regular way in composition from that evolved in the final stages, since the cautery may be brought into contact with some fresh tissue as well as partly decomposed tissue up to the time the resection is completed. It is also possible that in some instances the oxygen is in part of atmospheric origin, since it is difficult to be absolutely certain of complete exclusion of air. However, the higher ratio of oxygen to inert gas present in some of the gaseous mixtures indicates that the oxygen is evolved by the action of the cautery on the tissues.

The surprisingly rapid rate at which highly inflammable gases may be evolved in the use of high frequency currents for transurethral resections emphasizes the necessity of caution to prevent the occurrence of serious accidents. Since a small volume of gas mixed with air is sufficient to produce an explosion of great violence, a mere washing out after each series of cuts cannot be considered an adequate safeguard unless the entrance of air is rigidly prevented. In cases of dilated or atonic bladders or when a diverticulum is present, accumulated gases may not be removed even by careful washing. The diverse character of the gases in the mixture precludes the possibility of their removal by an absorbent. If a large amount of air or gas collects in the bladder, as shown by a large bubble, this should be aspirated by inserting a ureteral catheter into the bubble before further cutting or coagulation is done. When the patient is placed in the Trendelenburg position the bubble is brought closer to the area to be coagulated and the danger of explosion is increased, as explosion does not occur unless the arc comes in direct contact with the gas.

SUMMARY

A mixture of inflammable gases is produced when high frequency currents are used for transurethral resections.

Similar gaseous mixtures have been obtained by the use of the heat cautery.

The gases are produced by the thermal decomposition of the tissues.

The composition of the gaseous mixture has been determined, and it has been shown that oxygen from external sources is necessary to render the gas explosive.

3. Treadwell, F. P., and Hall, W. T.: Analytical Chemistry, ed. 7, New York, John Wiley & Sons, Inc. **2**: 643, 653, 656, 676 and 698, 1930.

4. Paal and Hartmann: Ber. d. deutsch. chem. Gesellsch. **43**: 243, 1910. Rideal: J. Am. Chem. Soc. **42**: 749, 1920.

ABDOMINAL PAIN AS A SYMPTOM OF DISEASE OF THE BRAIN

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Abdominal pain is not generally associated with disease of the brain; when gastric distress does occur in tumors or other cerebral conditions it is either ignored or casually explained on the basis of the associated nausea and vomiting. Occasionally, if the pain is sufficiently severe, gastro-intestinal or gallbladder disease is thought of, as is also the possibility that the cerebral condition is secondary or metastatic in nature. The very rare occurrence of abdominal pain as a symptom of tumors of the fourth ventricle is not generally referred to (Ernest Sachs some time ago reported one case) or regarded as clinically important, and when fleeting thought is given to the fact the opinion ventured is that it may have something to do with the vagus. Many years ago I saw a boy (case 1) with a frontal epidural abscess who presented a clinical picture of acute appendicitis. He was operated on, a normal appendix was removed, and fortunately he recovered when the abscess was evacuated by the brain surgeon. Several years later I saw a girl, aged 16 years, with an intrapontile tumor that extended to the midbrain and possibly involved the hypothalamic region, who complained of abdominal pain. The first symptom was urinary retention requiring catheterization; but she also had definite abdominal pain not associated with distention of the bladder. About the same time a young man with hemangioblastoma of the cerebellum came under my observation. The clinical history, which extended over a period of years, was punctuated by recurrent attacks of abdominal pain. Because of negative results of the general medical examination the patient's complaints were looked on as psychoneurotic. He subsequently died of the cerebellar tumor, which had invaded the fourth ventricle.

These three cases led to the question whether disease of the brain may not in some way affect the visceral efferent pathways anywhere from the cortex through the hypothalamus to the vagus region in such a way as to manifest itself on occasion in the form of abdominal pain. What is known as abdominal migraine, a rather ill defined clinical syndrome, also came to mind, and the question arose as to the possible correlation of the abdominal symptoms with what is regarded as a cerebral condition. The occurrence of abdominal pain either as an epileptic aura or following a convulsive attack or as the equivalent of a convulsion presented itself for consideration. So did the rare occurrence of morbid hunger in brain tumors. Still another question was raised by the occasional presence of abdominal pain, definitely not on the basis of radicular involvement, in both acute and chronic encephalitis. The fact demonstrated by Cushing that solution of pituitary injected into the ventricles gives rise to gastric hypermotility, pylorospasm and reverse peristalsis lent further plausibility to the assumption that abdominal pain may be a symptom of disease of the brain. The occurrence of peptic ulcer in cortical lesions, a fact that has received considerable attention in recent years though known practically since the days of Rokitansky, naturally also served as both question and answer to the problem of abdominal pain in disease of the brain, despite the fact that what is here considered is merely pain and not a pathologic condition of the gastro-intestinal tract. Finally arose the question whether the abdominal pain that the "neurotic" often complains of, or the intestinal peristalsis that manifests itself in diarrhea and the reverse peristalsis that expresses itself in vomiting, or the inhibition of gastric and intestinal peristalsis, are not in effect the result of disturbed cerebral physiology rather than what is with ill concealed contempt designated as "bellyaching."

All these facts, to be discussed presently at greater length, which are further supported by the experimental production of intussusception after ablation of the premotor cortex, justify the assertion that abdominal pain, without demonstrable intra-abdominal pathologic changes, may be regarded as a symptom of disease of the brain. That it is not rare can be inferred from the fact that in a comparatively short time I have been able to gather sixteen cases. Indeed, special attention revealed a number within a very few months. However, whether or not the symptom is common or rare is not nearly so important as that it occurs and that it is generally overlooked or wrongly interpreted. In any case, it demands explanation. The following cases, given here in the briefest outline, illustrate the occurrence of the symptoms:

REPORT OF CASES

CASE 1.—A boy, aged 10 years, seen by me in consultation two weeks after an operation for "acute appendicitis," had had a moderate degree of fever for several days, complained of severe frontal headache, vomited, and was going from drowsiness into stupor. Two weeks before the boy began to complain of abdominal pain. He vomited a few times, not after meals, and had fever. The blood showed leukocytosis. Based on these observations, despite the absence of abdominal rigidity, the surgeon made the diagnosis of appendicitis, operated on the boy and found a normal appendix. The patient made an uneventful operative recovery, but after ten days he began to have headache, to vomit once more and to go into stupor. When seen by me he had beginning papilledema and marked tenderness to percussion over the frontal bone, and the deep reflexes were bilaterally hyperactive. The presence of a comparatively recent scar on the forehead elicited the information that while playing the boy had fallen on his face a few weeks earlier and cut his forehead, but he had concealed the fact from his parents until he came home in the evening. Apparently he suffered few after-effects, the headaches, fever, abdominal pain, vomiting and leukocytosis not appearing until two weeks later. A roentgenogram of the skull showed a fissure fracture of the frontal bone. Trephine exploration led to the evacuation of a frontal epidural abscess and to recovery. The abscess was fairly large and had compressed the frontal poles.

CASE 2.—L. Y., a woman, aged 20, was admitted to the Montefiore Hospital because of abdominal cramps and generalized convulsions. The former, mainly localized in the epigastrium and right upper and lower quadrants, had lasted fairly continuously for three years. After repeated examinations at another hospital, it was decided that she had "chronic appendicitis" and "hysteria," and she was treated without relief. The convulsions appeared six months before admission to the hospital and gradually increased in frequency until they occurred several times a day. They were characterized by sucking movements of the lips, tonic spasms of the right upper extremity and groping of the hand, and were followed by a period of disorientation. She vomited frequently. She had old-standing bilateral choked disk with secondary optic atrophy, which had progressed to complete blindness. She died four days after admission to the hospital. At necropsy a large infiltrating hemorrhagic tumor of the right temporal lobe and hippocampus, invading the putamen and globus pallidus, was found.

CASE 3.—C. I., a man, aged 36, had had generalized convulsions for ten years, apparently controlled by medication. Ten days before admission to the Montefiore Hospital he began to vomit and to complain of epigastric pain. He gradually

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became stuporous and died. The neurologic examination gave few and inconclusive results. The fundi were normal. The laboratory data, except for an increase of lymphocytes (20 on the first and 10 on the second tap) in the spinal fluid, were negative. The temperature rose to 103 F. The patient died, and at necropsy an oligodendroglioma was found infiltrating the right frontal lobe up to the parietal.

CASE 4.—M. D., a man, aged 56, admitted to the Montefiore Hospital in 1933, had had seizures, headaches and impairment of vision for a year and a half and for the last six months pains in the right side of the abdomen, at times accompanied by vomiting. He became impotent and lost sexual desire five years before admission to the hospital. The petit mal attacks consisted of perception of bad odors, pallor, and momentary loss of consciousness. Examination showed scanty facial, axillary and bodily hair of female distribution, bilateral optic atrophy, constricted visual fields, a basal metabolic rate of minus 17, marked destruction of the sella turcica, negative serologic changes and a negative gastro-intestinal series of films. The diagnosis of pituitary tumor was made, operation was advised but refused, and the patient was discharged.

CASE 5.[1]—L. I., a man, aged 21, seen at the Jewish Hospital, Brooklyn, in May 1933, following right frontal sinusitis, had a right frontal epidural abscess, which was evacuated and followed by recovery. In November 1933 he was readmitted in coma and a right frontal lobe abscess was evacuated. After five weeks he was discharged, only to be again admitted in February 1934. This time a right temporal lobe abscess was evacuated. He remained in the hospital till May, at which time he was discharged fully recovered. In addition to headaches, convulsions and focal signs he suffered throughout his stay in the hospital from attacks of right-sided abdominal pain, accompanied by nausea and hiccups. Abdominal examination did not account for the pain. As his cerebral condition cleared up the abdominal pains subsided.

CASE 6.—A. G., a youth aged 15, was admitted to the Jewish Hospital, April 27, 1934, because of headache, vomiting and convulsions. He had fallen and struck his head, March 11, but was not unconscious. April 6 he began to have generalized convulsions. From April 13 to April 27 he suffered generalized abdominal pains. Examination showed bilateral papilledema and left homonymous hemianopia. Evacuation of a right temporal lobe abscess resulted in complete recovery.

CASE 7.—A. A., a woman, aged 41, complained of headaches and pains in the back of the eyes for ten weeks and pains in the left lower quadrant, worse at night, for six weeks. Except for bilateral choked disk with retinal hemorrhages, she showed no neurologic signs. A ventriculogram revealed a dilated ventricular system, including the fourth; namely, marked internal hydrocephalus. Suboccipital exploration failed to show a tumor. The patient was discharged unimproved and entered another hospital, where another operation was performed and the diagnosis of arachnitis blocking the ventricular foramina was made.

CASE 8.—M. H., a woman, aged 46, admitted to the Neurological Institute, complained of stomach trouble with cramps and vomiting, occipital headache, unsteadiness, and disturbance of vision. The history was that she had been suffering occipital headaches for fourteen years. At the same time she had blurring of vision and unsteadiness in walking. During this period she had attacks of cramping pains in the abdomen, which increased in severity for four or five days and decreased for a few days, only to recur again and again. The attacks were accompanied by nausea and vomiting. The presence among other conditions of left homonymous hemianopia pointed to a right-sided lesion, and at operation a meningioma overlying the right occipital lobe was removed.

CASE 9.—W. K., a male, admitted to the Neurological Institute, Oct. 1, 1934, because of pain in the eyes and the stomach of about one month's duration, awoke one night with severe pain in both eyes and very severe abdominal cramps unaccompanied by nausea or vomiting. The pains lasted about one hour and recurred every night. Abdominal examination was negative. The neurologic changes consisted of left-sided pyramidal tract signs and blurring of the margins of the disks. Roentgenograms of the skull showed a calcified mass in the inferior portion of the right occipital lobe with characteristic parallel, convoluted arrangements seen in venous angioma of the brain. The patient was not operated on and was discharged ten days after admission.

CASE 10.—J. H., a man, aged 36, admitted to the Neurological Institute in June 1934, complained of headache, difficulty in walking, spots before the eyes, and abdominal pains and vomiting. He had been operated on in August 1925 and again in January 1928 for a left cerebellar cyst. For five months before the last admission he had been suffering from severe pains in the abdomen and vomiting. Roentgen examination showed no evidence of pathologic changes either in the stomach or in the intestine. Neurologic examination confirmed the recurrence of the tumor in the left lobe of the cerebellum.

CASE 11.—G. T., a girl, aged 19 years, was admitted to the Neurological Institute with a two-year history of frontal headache, vomiting, somnolence and impairment of vision. For one year she had had occasional attacks of abdominal pain. Reduction of visual acuity, bilateral optic atrophy, temporal hemianopia in one eye and roentgen evidence pointed to a buccal neural pouch tumor. She was operated on and a cyst in the suspected region was found and drained. During her stay in the hospital both before and after the operation, the patient had on three or four separate occasions severe lancinating abdominal pains with tenderness. At one time the diagnosis of appendicitis was made. Examination failed to reveal pathologic changes of the abdomen.

CASE 12.—E. O., a girl, aged 16 years, admitted to the Neurological Institute, complained of headache, drowsiness, vomiting, abdominal pain and weakness of the left side of the body for the past month. Examination showed left hemiparesis, papilledema with retinal hemorrhages and roentgen evidence of increased intracranial pressure. At operation an infiltrating tumor beginning in the right frontal lobe and extending backward to the parietotemporal was found. Pathologically it proved to be a medulloblastoma. The abdominal pains that persisted after operation consisted of sharp cramps in the right lower and upper quadrants. The pains had no relation to meals.

CASE 13.—R. W., a woman, aged 40, admitted to the institute, complained of vomiting, headache, unsteadiness, and awkwardness of the right arm. For several months she also had abdominal colic. Examination showed cerebellar ataxia, nystagmus and bilateral choked disk. A ventriculogram pointed to a tumor of the posterior fossa. At operation a right cerebellar tumor, later reported as an "unclassified glioma," was removed. The abdominal pains, which persisted after the operation, consisted of gnawing in the right upper and lower quadrants and of colic-like spasms, which kept recurring. There were no associated gastro-intestinal symptoms. Careful examination ruled out suspected gallbladder disease and other abdominal conditions.

CASE 14.—F. F., a woman, aged 48, on admission to the institute complained chiefly of frontal headache, vomiting, dizziness, and mental confusion of three months' duration. For two years she had had recurrent abdominal pain. Examination showed bilateral papilledema, left lower facial weakness and increased deep reflexes on the left side. A roentgenogram of the skull showed a right frontal, parasagittal tumor. At operation an infiltrating tumor, later proved to be an astrocytoma, was found in the frontal lobe posteriorly and parasagittally. The abdominal pains both before and after the operation, which had no relation to meals, consisted of cramps near the umbilicus. Because she had been jaundiced sometime before the operation, roentgen and other examinations were made and no gallbladder disease was found. Further examination at the hospital failed to reveal the cause of the abdominal pains.

COMMENT

In trying to explain the occurrence of abdominal pain on the basis of brain lesions, one is confronted with the difficulty that little is as yet known of the anatomy and physiology of the visceral efferent or autonomic pathways of the brain. Nor is it possible on the basis of pathologic lesions alone to localize this symptom anatomically or to correlate a particular region with the

1. I am indebted for this and the following case to Dr. Abraham Kaplan.

production or mediation of the pain. While six of the cases herein recorded (and if the tumor in the region of the pituitary, which impinged on the frontal lobe, is included there were seven) involved the frontal lobes, two each were in the temporal and occipital lobes and three were cerebellar or in the posterior fossa. Experimental evidence points more or less to the premotor area, but there is much to be said for an interbrain or hypothalamic localization, and arguments could be adduced in favor of the vagus region.

Although I am not here concerned with the question of neurogenic erosions [2] or the production of gastric and duodenal ulcers [3] and perforations by cerebral lesions, their occurrence bears on the problem of abdominal pain. Cushing [4] correlated the occurrence of peptic ulcer with lesions of the interbrain region, and his experimental demonstration that gastric hypermotility, pylorospasm and reverse peristalsis can be induced by the intraventricular injection of solution of pituitary lends plausibility to such a view. It is noteworthy, however, that, if one excludes the two cases of malignant hypertension, which do not help in the localization, six of his remaining nine cases were cerebellar or posterior fossa tumors, one was parietal, only one was in the third ventricle, and the other was an olfactory groove meningioma. If, therefore, localization should be attempted on the basis of his cases, one might be compelled to look in the vagus region. None the less there is a great deal to be said for the hypothalamus [5] and its numerous visceral autonomic structures. It may be, of course, that lesions in all three regions are capable of producing abdominal pain and that a discharge may be set up in the autonomic portion of the cerebral cortex, wherever that may be, or the hypothalamic or vagus region. Most of the evidence so far adduced points, however, to the cortex.

As far back as 1876, Bochefontaine [6] showed that stimulation of the sigmoid gyrus in the dog resulted in peristaltic contraction of the pylorus and sometimes peristalsis of the duodenum and ileum; also that it inhibited rhythmic contractions of the stomach. Other experimenters showed that cortical stimulation may either set up or inhibit peristalsis and concluded that the cortex actually has an inhibiting influence. This was deduced from the fact that stimulation of the vagus does not induce peristalsis if the cortical connections are intact but does if the cortex is ablated or if sections are made at various levels above the vagus. The occasional occurrence of diarrhea in the case of fright is thus interpreted as the result of the sudden removal of cortical inhibition. But the more recent work of Watts [7] and of Watts and Fulton [8] is not only highly interesting but probably points to the explanation of abdominal pain in brain lesions. They reported the spontaneous occurrence of intussusception in monkeys after ablation of the cortex and showed that stimulation of the premotor cortex induced peristalsis and in two cases intussusception, that occasionally stimulation of the frontal and postcentral convolutions induced peristalsis, and that sectioning of the vagi prevented the occurrence of intussusception and induced only slight peristalsis. They concluded that the cerebral cortex contains autonomic representation, both inhibitory and excitatory. They stated that the probable pathways are from the cortex to the hypothalamus, the red nucleus, the substantia nigra and the vagus. That the pathway is by way of the vagus was inferred from failure of cortical stimulation to induce peristalsis if the vagi are cut. That the hypothalamic region is another center was deduced from failure to cause peristalsis on stimulation of the lateral margins of the infundibulum if dial or barbiturates were given, these drugs being presumed to affect the hypothalamic nuclei.

That pain can occur as an epileptic aura, as an equivalent of a convulsion or as a postconvulsive phenomenon is a well known clinical fact. Penfield and Gage [9] have shown that stimulation of the cortical area *7a* caused pain in the right lower quadrant of the abdomen and elicited an epileptic attack. They concluded, as did Watts and Fulton in the case of monkeys, that there is in man sensory autonomic representation for the gastro-intestinal tract in the cerebral cortex. Watts and Frazier [10] also state that a neurogenic discharge may manifest itself through abnormally vigorous movements of the gastro-intestinal musculature and that the discharge comes from the autonomic portion of the cerebral cortex, although they cannot say just what part of the cortex it is. In any case, cortical autonomic epilepsy expresses itself in nausea, vomiting and gastric distress. Fulton suggests that morbid hunger may be due to excessive motility of the stomach. Spiller [11] once reported the occurrence of morbid hunger in a patient with glioma of the pons and again (quoted by Watts) in the case of a large meningioma of the frontal lobe.

Migraine expressing itself in recurrent crises of abdominal pain, though neither common nor well defined, may possibly be the expression of fleeting cerebral pathologic changes. This view is fortified by the opinion commonly held that some cases of migraine are due to anaphylaxis and by the fact that the brain can react focally to sensitization. I have seen such cases and so have other observers. Cassirer [12] mentioned abdominal migraine on the basis of angioneurotic edema, and E. Flatau described abdominal pains, hyperperistalsis and diarrhea in migraine. Oppenheim [13] cited cases of paroxysmal abdominal pain in children with migraine as equivalents lasting several hours and cited Moebius, who spoke of gastroxynsis, namely, paroxysmal hypersecretion of hydrochloric acid, as a form of migraine. The view that abdominal pain may be an expression of paroxysmal headache due to local pathologic changes of the brain does not conflict with the opposite view that the pathologic changes of the brain or, at any rate, migraine may be the result of gastric or hepatic disturbances.

While encephalitis, because of its dissemination, cannot be lightly invoked as a basis for cerebral localization, it is a brain disease, and, if abdominal pain can be shown to occur as one of its manifestations, the inference is justified that the pain is cerebral in origin. I am not unmindful of the fact that radicular pains in the

2. Masten, Mabel G., and Bunts, R. C.: Neurogenic Erosions and Perforations of the Stomach and Esophagus in Cerebral Lesions, Arch. Int. Med. **54**: 916 (Dec.) 1934.

3. Grant, F. C.: Brain Lesions and Duodenal Ulcers, Ann. Surg. **101**: 156 (Jan.) 1935.

4. Cushing, Harvey: Pituitary Body, Hypothalamus and Parasympathetic Nervous System, Springfield, Ill., Charles C. Thomas, 1932.

5. Watts, J. W., and Fulton, J. F.: The Effect of Lesions of the Hypothalamus upon the Gastro-Intestinal Tract and Heart in Monkeys, Ann. Surg. **101**: 863 (Jan.) 1935.

6. Bochefontaine, cited by Watts.[7]

7. Watts, J. W.: The Influence of the Cerebral Cortex on Gastro-Intestinal Movements, J. A. M. A. **104**: 355-357 (Feb. 2) 1935.

8. Watts, J. W., and Fulton, J. F.: Intussusception: The Relation of the Cerebral Cortex to Intestinal Motility in Monkeys, New England J. Med. **210**: 883, 925 (April 26) 1934.

9. Penfield, Wilder, and Gage, Lyle: Cerebral Localization of Epileptic Manifestations, Arch. Neurol. & Psychiat. **30**: 709 (Oct.) 1933.

10. Watts, W. J., and Frazier, C. H.: Cortical Autonomic Epilepsy, J. Nerv. & Ment. Dis. **81**: 168-176 (Feb.) 1935.

11. Spiller, W. G.: Brain Tumor, J. A. M. A. **53**: 2078 (Dec. 18) 1909.

12. Cassirer, R.: Handbuch der Neurologie, Berlin, Julius Springer **4**: 264, 1914.

13. Oppenheim, H. Lehrbuch der Nervenkrankheiten, Berlin, S. Karger, 1923, p. 1865.

lower thoracic region can, as in tabes for instance, simulate abdominal syndromes; but in the main I believe that the glib ascription of abdominal pain to root involvement is not justified. The observation may be true, perhaps, in the myeloradicular types of encephalitis but does not hold for those cases in which the infection is more or less limited to the brain, midbrain and brain stem. Certainly no definite radicular distribution has been demonstrated in those cases. But, what is more important, I have seen instances of abdominal pain in encephalitis when there was no suspicion whatever of radiculitis and can cite at least two cases of dystonia, definitely on the basis of encephalitis, which were characterized by constant and severe abdominal pains that hardly yielded even to morphine, and by intractable vomiting that was the expression of reverse peristalsis. That dystonia, too, has an underlying disseminated pathologic condition not lending itself to special correlation of structure with function does not invalidate the conclusions that the abdominal pain is in fact the result of disease of the brain. In any case both acute and chronic encephalitis affect those regions, namely, the cortex, interbrain and bulb (vagus), which may possibly have to do with the production of abdominal pain, even though the virus has a predilection for the hypothalamic and midbrain regions. The inference is also justified that cardiospasm and esophagospasm may be due to hypothalamic involvement; it is known to occur in impairment of function of the vagus.

While hysterical or so-called psychogenic abdominal pains are generally vague and diffuse, they are not infrequently severe and localized sufficiently to simulate abdominal syndromes of one kind or another. It is not at all either a novel or an uncommon experience to come across hysterical patients who have been operated on one or more times for nonexistent gastric ulcers, gallbladder disease, appendicitis and the like. The common explanation that hysterical pains are psychogenic in nature and the psychoanalytic one that they are conversion symptoms, though to a large extent true and psychologically satisfactory, ultimately beg the whole question. To say that the hysterical pains are of no significance is obviously untrue and to dismiss the patient with the statement that he is "bellyaching" is bad diagnosis and worse practice. The fact is that the patient does have a belly ache and it is just as real to him or to her as if it were caused by renal or gallbladder colic, for instance. It may well be that actual disturbance of cerebral functioning, secondary to psychic emotional stimuli, is the underlying factor in the production of abdominal pains. In this sense psychogenesis merges into phsyiogenesis or neurogenesis. That sudden fright, for instance, can induce intestinal peristalsis and lead to diarrhea or contraction of the stomach wall and precipitate vomiting is a well known clinical fact. It may be debatable whether one is dealing here with cortical stimulation or inhibition, but it is hardly to be doubted that one is dealing with a cerebral process probably involving in the circuit the cortex, the hypothalamus and the vagus. Since it has been shown that abdominal pain can and does occur on stimulation or irritation or pathologic involvement of the cortex and possibly of other regions, it is quite probable that the hysterical abdominal pain is the expression of a psychophysiogenic process and that the hysterical patient suffers neurogenic cerebral pain. In any case, cerebral vomiting and pain, and this may be equally true in cases in which there are demonstrable pathologic changes, are not altogether unrelated.

CONCLUSIONS

From what has been said so far, it may be set down as a clinical fact that abdominal pain occasionally occurs in disease of the brain and that it may be regarded as one of its manifestations. The probability is that it occurs more frequently than appears from casual observation and that special attention will bring to light a greater number of cases, particularly in tumors and other expanding lesions of the brain. It has been shown that it can occur in the convulsive state, in migraine, in encephalitis, in hysteria, and under experimental conditions. The present paper deals with expanding lesions, which are of such great importance to the neurologist and neurosurgeon. Most of the evidence presented points to the cortex and possibly to the frontal, more particularly the premotor, area as the source of neurogenic abdominal pains and indicates that the cortex contains visceral autonomic representation. But there is also evidence to show that the hypothalamus and possibly the vagus region may be responsible for the abdominal pains, and that if the cortex is the source of the pain it is mediated by way of the lower levels or centers. The symptom, therefore, cannot be said to have localizing value, though it may point to the frontal part of the brain. Both the observation and the proffered explanation may have clinical significance alike for the neurologist and for the internist and abdominal surgeon.

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SYSTEMIC THRUSH IN CHILDHOOD

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Since the days of Virchow a group of diseases which primarily affect the skin and its appendages have been designated as mycoses. The etiologic factor in these disorders seems to be plant agencies, particularly fungi.

Thrush is one of these diseases and plays a principal rôle in the mycotic disorders of childhood. It differs from other fungoid infections in that, in addition to the skin, the mucous membrane and some of the internal organs may be affected.

Contrary to general opinion, thrush is not caused by only one species of fungus, the so-called thrush fungus or Oidium albicans (Robin). According to Castellani [1] it may be caused by a number of different fungi, some of which are botanically far apart from one another, belonging to separate species, genera and families. The fungi belong to the large group of thallophytes, plant organisms that are without chlorophyll, that do not assimilate carbon dioxide and that are dependent on a saprophytic or parasitic existence.

There are three different groups of the mycoid fungi-molds, yeast forms or sporothrix, and dermatophytes. It is under the last named group that thrush as commonly seen in infants and children is classified.

Two principal types of thrush can be distinguished clinically: the white or gray-white type that is extremely common and the yellow or yellow-brownish type of rarer occurrence.

The dermatophytes are distinctly dermatrophic and have a predilection for the carotene-containing epi-

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1. Castellani, Aldo: J. Trop. Med. **23**:17 (Jan. 15) 1920; Fungi and Fungous Diseases, Arch. Dermat. & Syph. **17**:61 (Jan.), 194 (Feb.), 354 (March) 1928.

dermal layers and the hair and nails. The dermatophytes require very little nitrogen and make little demand on their environment for subsistence.

The capacity of most dermatophytes to exist or live is exceptionally good. They are very resistant to physical conditions, such as heat, cold, dryness and many chemical substances. An explanation of this resistance is probably found in the thickened membrane which supports the spore forms.

Dermatophytes require but little oxygen and many forms are anaerobic. They have an excellent buffer action, which gives them the capacity of retaining a favorable reaction for a long time and of counteracting unfavorable ones rapidly. They tend to form alkali and have a marked tendency to cause fermentation.

Lipoids permit the fungi to enter into a slight lipoid coating of the skin. Trypsin-like ferments aid in the solution of the surrounding skin, and the resulting products of alkaline breakdown cause the moderate inflammation which is characteristic of these lesions.

The affected skin manifests certain defense reactions, one of them being a progressive keratinization and lamellation, particularly of the horny layers of skin, such as the nails and nail beds.

Thrush belongs to a group of mycoses which not only affect the skin but may also affect the mucous membranes and the internal organs and in rare cases cause general sepsis.

The most common form of thrush occurs in the mouth of young infants, particularly if they are poorly nourished. Ordinarily the disorder is due to a mold and readily yields to simple forms of treatment. It can, however, occasionally show formidable symptoms and present a clinical picture of an infection which for tenacity and baffling resistance to all forms of therapy hardly has an equal. If a chronic form of general sepsis develops, it almost uniformly leads to a fatal termination.

Beginning with lesions about the mouth there are extensive angina, involvement of the entire gastro-intestinal tract and lesions about the anus and, in the female, about the genital region. Often there is more or less involvement of the lungs. Of the abdominal organs the kidneys and liver are chiefly invaded.

Exceedingly chronic lesions develop on the skin, involving particularly the extremities and the nails and nail beds and appearing in fairly large, isolated patches on the trunk.

The lesions are rather dry with considerable tendency to scaling and crusting. There is little itching except when interdigital spaces are invaded. At no time is there a severe inflammatory reaction and, even when there is evidence of extensive sepsis, the disorder may be afebrile unless acute pulmonary inflammation is a complication.

In practically all the lesions, massive formation of mycelia and spores can be demonstrated. Small vesicles are often found in the desquamating portions of the lesions. The organisms are grown easily, especially on solid mediums.

Thrush is not contagious and arises only when conditions favorable to its development are present.

Czerny [2] expressed the view that fungi are present in the mouth of every infant with thrush. Epstein [3] found that thrush is not found in the infant's mouth until the fifth day and is rarely found after the second year.

2. Czerny, Adalbert, and Keller, A.: Des Kindes Ernährung, Ernährungsstörungen und Ernährungstherapie, Leipzig, Franz Deuticke, 1901, 1912, 1922.
3. Epstein, B.: Jahrb. f. Kinderh. **104:** 129 (Feb.) 1924.

Thrush is not confined to young infants, as it may occur at all ages. It is not known why the organism can remain latent and harmless and then suddenly become pathogenic.

In latent thrush not only the mouth but the entire digestive tract may be involved. The organisms are apparently not destroyed by intestinal secretions. In all cases of thrush the infection probably originates in the mouth.

Thrush generally remains a localized superficial disease and seldom becomes an infection of the blood stream, but it may involve the skin and internal organs extensively and present all the manifestations of general sepsis.

Moro [4] expressed the belief that sepsis due to thrush is more common than is generally believed. Generalized cutaneous manifestations of thrush in infants were first reported by Beck [5] and by Ibrahim.[6] Since then occasional additional cases have been reported in the pediatric and dermatologic literature.

Still more rare are the generalized septic forms, which generally end fatally. Heubner [7] reported such a case in 1903 in a girl, aged 16 months. The entire visible mucous membrane of the mouth, throat and pharynx was covered with a yellowish, dry exudate which resembled a diphtheritic membrane but proved to be thrush. Fatal termination of the case was preceded by dyspnea and severe symptoms of sepsis. Extensive pulmonary and renal involvement was found at autopsy. Typical organisms were recovered from all the lesions.

A similar case in an infant of 6 months was reported by Schamberg.[8] In addition to the oral lesions, there were extensive cutaneous lesions and death occurred soon.

A case of thrush in an infant 5 months of age showing polyarthritis and extensive gastro-intestinal involvement was mentioned by Goldring.[9] This patient recovered. A twin sister also had generalized thrush but no symptoms referable to the joints.

Christison [10] reported the condition in an older child. The first symptoms appeared when the child was 2 years old and the entire duration of the disease was three years. Extensive cutaneous lesions developed, especially about the face, scalp and nails and finally there was massive pulmonary involvement. Extreme weakness and emaciation preceded the fatal termination.

During twenty-five years of pediatric practice I have seen five patients with generalized systemic thrush, all showing very unusual symptoms. Four of these cases are reported here; the fifth case was the one reported by Dr. Christison. The patient had been under my care for about one year.

REPORT OF CASES

CASE 1.—B. G., a girl, aged 4 months, I saw first in October 1913. The complaint was excessive drooling, eruptions about the mouth, vulva and rectum, and white patches in the mouth. She had been in fairly good health up to the age of 5 months. She had been breast fed for one month and then artificially fed with mixtures of dilute cow's milk. The gain in weight had been good until the third month. After that there were gastro-intestinal disturbances, persistent loss in weight and gen-

4. Moro, E., in von Pfaundler, Meinhard, and Schlossmann, Arthur: Handbuch der Kinderheilkunde, ed. 2, Leipzig, F. C. W. Vogel, 1910, p. 19.
5. Beck: Dermat. Studien **20:** 494, 1910; Dermat. Wchnschr. **60:** 301, 1915.
6. Ibrahim, J.: Arch. f. Kinderh. **55:** 91, 1911.
7. Heubner, O.: Deutsche med. Wchnschr. **29:** 581, 1903.
8. Schamberg, J. F.: Arch. Pediat. **32:** 617, 1915.
9. Goldring, Morris: Thrush Complicated by Acute Polyarthritis in an Infant, J. A. M. A. **76:** 724 (March 12) 1921.
10. Christison, J. T.: Fatal Case of Thrush Involving the Skin, Lungs and Nails, Am. J. Dis. Child. **26:** 250 (Sept.) 1923.

eral decline. The drooling and eruptions had been present for about two weeks before I saw the infant.

Eruptions resembling impetiginous lesions were present in the angles of the mouth and on the right cheek. Lesions similar to those seen about the mouth were found adjacent to the rectum and a few on the labia majora.

A moderate degree of diarrhea was present. The temperature was not elevated. There was paronychia of the thumb and middle finger of the right hand. The mucous membranes of the lips, the entire buccal surfaces and the anterior portion of the tongue were covered with yellowish white membranous patches. There was no fetor. The membranes could not be detached and there were no bleeding surfaces. Diphtheria was thought of but both smear and culture proved to be negative. Scrapings of the membrane showed numerous mycelia and spores of Oidium albicans. Scrapings from all the superficial cutaneous lesions, including the paronychia, showed the same organism and established the diagnosis.

Within a few days the entire mouth and throat, including the tonsils and hard and soft palate, were covered with a thick, furry, whitish membrane. There was excessive drooling and considerable difficulty in breathing.

Food was persistently refused and a moderate diarrhea with mucous stools continued. Simultaneously with the onset of fever, pneumonic inflammation developed in both lungs, presumably due to extension of the thrush. The infant succumbed three weeks after the onset of the illness and the first evidences of the infection. Autopsy was not permitted.

No form of treatment either local or systemic inhibited or influenced in the least degree the progressive development of the disease.

CASES 2 (M. S.) and 3 (S. S.).—The next two cases involved two sisters, M. S., aged 4 years and 9 months, and S. S., aged 6 years. These children were admitted to the University Hospital in July 1924 with identical complaints of generalized alopecia, generalized impetigo and malnutrition.

The father was a tanner but had never had any cutaneous disease. Two brothers, one aged 13 years, the other 3 years, have been well and free from the disorder exhibited by the sisters.

Both girls were born at full term, had normal weight, were breast fed for a year and developed normally in every respect until they were a year old. Both had pertussis during the first year and the older child had a mild attack of varicella during the fourth year of life.

In the older child, cutaneous lesions appeared when she was 3 months old, first in the form of a nail-sized crust over the occiput. Similar crusts developed on both cheeks. These were diagnosed as eczema and cleared up under treatment. A few weeks later similar lesions appeared about the corners of the mouth.

The lesions had a red, slightly inflammatory base, covered with dry scaly crusts. The removal of these left a raw, red, slightly weeping area over which the dry, scaly crusts rapidly reformed. Lesions have persisted about the mouth and its immediate neighborhood up to the present time.

When she was 18 months old, the finger-nails of both hands became involved, the infection clearing up at times with loss of the nails and then reappearing. After the second year, lesions similar to those on the face spread over the dorsal surfaces of both feet, the heels and the surfaces of both elbows and knees. There were practically no lesions on the trunk, and the vulva and rectum were free.

When the child was 3 years old, an attending physician diagnosed the condition as tinea. Under treatment all the lesions cleared up except those about the mouth, only to reappear again in three months over all the previously affected body surfaces.

Subsequently a diagnosis of impetigo was made, but no form of treatment seemed to influence or relieve the disorder.

The cutaneous condition continued practically unchanged from the time of its initial appearance to the time of admission to the hospital, a period of nearly six years. During that entire period there was very little gastro-intestinal disturbance and the child was relatively free from respiratory disease.

Two striking features developed during the course of the disease. There was marked retardation of the child's growth, especially in height, leading to definite dwarfing, but without any impairment of the intellect, and complete alopecia, which first developed when she was 4 years old. Up to the time of admission, the hairs of the scalp, eyebrows and lashes had shed and reappeared four successive times, but there had been no regrowth of hair for over a year and there was every indication that the baldness was permanent.

The history of the younger child previous to admission was similar to that of the older sister. Cutaneous eruptions about the mouth, eyes and ears and on the feet, legs and elbows, over the sacrum and on the nails of both hands and feet have existed for a period of three and one-half years. There has been considerable itching of the eruptions about the mouth and eyes. Troublesome anorexia has existed for nearly three years and she has shown marked undernutrition for about one year. As in the older child, there has been considerable dwarfing.

The eruption first began when the child was a year old and dry, itching, scaly eruptions on a reddish base developed about the corners of the mouth and eyes. The diagnosis, treatment and course of the lesions and their character and general distribution were almost identical with those of the older sister. The hair did not begin to fall out until a year previous to admission and grew out once or twice, but there had also been complete and apparently permanent baldness with loss of eyebrows and lashes for four months preceding her entrance to the hospital.

At the time of admission the striking feature in both cases was the marked dwarfing. They had the stature and appearance of infants of 8 months and a year, respectively, but the intellect and mental development as evidenced by their speech and actions were those of children 4 and 6 years old. The complete baldness and loss of all hair about the eyes, the marked pallor and transparency of the skin, and the marked state of undernutrition and tissue atony also were striking features. They were able to sit up but had not walked for many months.

Considerable tendency to looseness of the bowels has existed during the past year. Infections of the upper respiratory tract have been infrequent. The mouth, nose, throat and lungs of both children were free from any evidence of infection at the time of admission.

Examination of the blood showed a slight secondary anemia in both cases and a normal differential white cell count. The urine was normal and renal function in both seemed to be entirely normal. The Wassermann and Pirquet tuberculin tests were negative. There were no abnormal neurologic signs to explain the marked trophic disturbances.

Both children were unusually alert, above the average in intelligence for their age, exceedingly active except for their inability to walk and amusing on account of their ceaseless intelligent chatter.

The skin over the entire body was moist, exceedingly delicate and transparent.

In the older child the characteristic cutaneous lesions were observed on the scalp, on the lobes of both ears, about the inner canthus of both eyes, on the lower part of the nose and at the corners of the mouth. There were no lesions on the trunk. Well circumscribed, red, papular, scaly lesions covered the region of both olecranons and the dorsal surfaces of both hands involving all the finger-nails in the form of a paronychia. Similar lesions were distributed about the knees and the dorsal surfaces of the feet, involving all the toe-nails.

The lesions in the younger child had a somewhat similar distribution about the face, especially the mouth, eyes and ears, and the extremities except that the finger-nails and toe-nails were not so extensively involved. The younger child had lesions about the rectum and over the sacrum. She had much more looseness of stool than the older child. Organisms were recovered from all the cutaneous lesions in both cases, were demonstrable in stool cultures and were readily grown from blood cultures.

Both patients were extremely resistant to treatment, which consisted of local applications to the cutaneous lesions, the use of ultraviolet radiation, neoarsphenamine, vaccine prepared from the cultures, occasional blood transfusions and dietary management. Dilute solutions of copper sulphate seemed to be most effective for the cutaneous lesions but nothing really produced any lasting improvement. The physical state of both children progressively declined. They were taken from the hospital

after a stay of four months, entirely unimproved, and died a few months later from marasmus and terminal pulmonary infection.

CASE 4 (C. B.).—A girl, aged 8 years, reared on a farm in North Dakota, was brought to the University Hospital in November 1928 with the complaint of chronic eruption of the skin. The lesions first appeared when she was 10 months old about the corners of the mouth and the nose, extending later to the extremities. They were pustular and showed a tendency to dry scaling and thick crusting. They periodically healed only to reappear again in aggravated form. The condition had continued all through the child's life since infancy.

A complete loss of hair of the scalp, eyebrows and eyelashes had occurred four different times since the beginning of the eruption and seemed to coincide with the height of the eruption and its reappearance with subsidence and partial healing of the lesions.

Looseness of the bowels and chronic bronchitis were a continually recurring complaint.

There was no history of tuberculosis or other chronic disease or cutaneous disorder in the family. One brother was living and well.

Birth was normal. The child was breast fed for one year and gained well up to the time the eruption appeared. After that she was continually underweight, although the increase in height has been adequate. Anorexia had been a persistent complaint.

At admission the child presented a thin, pale appearance. The stature was adequate for a child of 8 years. Slowness of speech and listlessness were marked but the mental faculties seemed unimpaired. There were numerous bald patches on the scalp and the remaining hairs were short, thin and very dry. The eyebrows and eyelashes were intact. The teeth showed a great deal of decay but the mouth and throat showed no signs of disease.

Except for the marked malnutrition, apparent anemia and cutaneous lesions, the physical examination was normal. The blood picture was that of a mild secondary anemia. The tuberculin and Wassermann tests were negative.

The cutaneous lesions consisted of dry, scaly, papulopustular patches, tending to fairly thick crusting with a red, slightly indurated and inflammatory base. These lesions were located about the lips and the corners of the mouth and on all the extremities. The dorsal surfaces of both hands and feet, all the nails of both hands and several toe-nails on both feet were extensively involved. Large, apparently coalescing lesions were present on both forearms, about the knees and on the lower part of the legs, but the trunk, genitalia and rectum showed no involvement.

Scrapings from all the cutaneous lesions and cultures from the throat and the stool showed the organism of thrush—Oidium albicans—present in massive growth. The organism was not found in expectorated material and in blood culture.

The characteristic resistance of this disorder to all forms of treatment when it extensively involves the organism and becomes a systemic infection was exhibited in this case also.

Of the local medications, silver nitrate and dilute solutions of copper sulphate seemed to be the most effective. Improvement was noted also after ultraviolet irradiation coupled with dietetic and hygienic management. Arsenicals, iodides, and vaccine prepared from culture material seemed to be entirely without effect.

The characteristic remissions and exacerbations continued to occur in spite of any form of treatment. The child was discharged practically unimproved after a stay of over four months in the hospital.

Nothing was heard from the patient until a recent inquiry for her was made. Her mother wrote as follows:

"Her sores bothered her constantly the winter she came back from the hospital in Minneapolis, but toward spring she started to improve. That summer (1929) she felt fairly well and her skin was clear most of the time. In the late fall and early winter of the same year the sores broke out again and she missed three months of school.

"Since then her condition has not been bad; she has attended school quite regularly up till this last winter, when she became worse. In addition to the old trouble she contracted measles and that certainly set her back. She lost all her hair, and the eruptions, especially around her ankles, have been worse than ever—pus and blood trickle out continually. Sometimes the sores itch so that she cannot sleep at night; and lately her eyes have been so sore. These last days she has felt somewhat better. She has grown considerably since you saw her; and whenever the sores heal up, she runs around and plays and is about as spry as any youngster."

The interesting feature of the cases reported consists in the extraordinary symptoms presented. The dwarfing effect of the disease presented in two of the cases and the generalized alopecia noted in three of them have to my knowledge not been reported in the literature. The fairly rapid form of sepsis observed in the case of the infant also seems to be exceedingly rare.

All four of the cases illustrate the formidable nature of this disorder when it becomes a generalized infection, and the remarkable ineffectiveness of any form of treatment.

920 East Fifty-Ninth Street.

ABSTRACT OF DISCUSSION

DR. ISAAC A. ABT, Chicago: Thrush infection is common in the new-born period; it is rare in older children and certainly uncommon in adults. It is assumed that thrush infection does not occur in the mouth cavity unless there has been some injury to the oral mucous membrane or the resistance of the infant has been lowered by nutritional disturbances. Professor Czerny said that in his experience thrush infection did not occur in a normal infant. I recall, however, periods in the nursery for the new-born when thrush infection occurred among the babies probably as the result of some temporary failure in the aseptic technic. There is no doubt that the fungous infection may spread to the pharynx and may descend through the larynx into the bronchial tubes or through the esophagus into the stomach and intestine. It has also been recorded that these thrush organisms may gain access to the blood stream; but again it must be assumed that in such cases the patient's resistance is low or that he is in a cachectic state. It seems to me that there is no reason why a generalized thrush infection should not occur. Thrush in older infants and children is most often associated with diarrheal diseases; perhaps the part played by a systemic thrush infection in the severity of the illness has been generally overlooked and the cause of the severe symptoms and the death has been assigned to alimentary infections.

DR. FREDERICK W. SCHLUTZ, Chicago: It is true that thrush infection is exceedingly common in the infants who are not doing well, but this type of picture as represented by the four cases just reported is, I believe, exceedingly rare. It seems that this ordinarily fairly harmless agent can, under the right sort of conditions, produce pathologic conditions which so seriously affect the child in a trophic way that it eventually dies. I think the baldness in three of these cases (in two of them it showed permanently and will doubtless become so in the third) is unique. The fact that the last child has been more or less under treatment for a period of something like seven or eight years indicates the peculiar trophic systemic effect this disease can have. Any treatment tried so far has been ineffective. I should like to try some of the dyes by the intravenous route and possibly roentgen therapy. At the time these cases were under my care, treatment along these lines was not quite as advanced as it is at present. I have, of course, no assurance that such treatment would be effectual. It seems that in the end all these patients finally succumb to the disorder. I think it is probably true that the condition is apt to be overlooked in children and especially in older children. One expects to see thrush in the infant not doing well. It may involve the entire gastro-intestinal tract and the internal organs and in that way contribute to the fatal termination of the case. The picture itself is rare and I have not been able to find a reference in the literature to the peculiar effects the disease may produce, such as complete dwarfing and complete and permanent loss of all hairs of the scalp and face.

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ACACIA IN THE TREATMENT OF NEPHROSIS

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EDNA WARWEG, M.A.
AND
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The use of acacia intravenously in the treatment of edema due to nephrosis has been advocated.[1] The rationale of this treatment is based on the fact that acacia is an inert colloid which, when introduced into the blood stream, will raise the osmotic pressure of the blood above the levels at which edema occurs. The theory is logical, but our experiences with its use have been disappointing.

Acacia in amounts approximating 1 Gm. per kilogram of ideal body weight has been given intravenously to four children with nephrosis in order to combat edema. The first administration of acacia was markedly effective, but not only were succeeding injections progressively less effective in reducing edema but other unfavorable symptoms developed. In each child the liver became markedly enlarged and tender, and simultaneously with a period of acacia treatment the serum protein, particularly the albumin fraction, dropped to dangerously low limits, remaining very low as long as the use of acacia was continued, and increasing very slowly after the use of acacia was stopped. The individual reports follow:

REPORT OF CASES

CASE 1.—J. A. J., a girl, aged 3 years, was brought to the hospital, Aug. 30, 1932, because of swelling of the ankles, hands and feet, and sore throat. The patient had been well until five weeks previously. At the beginning of her illness she had a series of "boils" in the left axilla, which were opened and drained, during which time she contracted a "cold" and several times complained of a sore throat. Swelling of the face, feet and ankles soon became noticeable and was associated with scanty urine. The temperature was only slightly elevated.

When first examined at the hospital she had slight generalized edema, pallor of the skin, subacutely inflamed tonsils and pharynx, and a blood pressure of 105 systolic, 70 diastolic. The urine contained rather large quantities of albumin, numerous casts and white blood cells, but no red blood cells. The hemoglobin was 80 per cent, red blood cells 5,400,000, white blood cells 11,200, with a normal differential count. The blood Wassermann reaction was negative. The serum protein was 3.5 per cent, nonprotein nitrogen 34.6 mg. per hundred cubic centimeters, and the cholesterol 296 mg. per hundred cubic centimeters. The throat was treated conservatively. A high protein diet was given. After a few days in the hospital the edema rapidly increased.

Thyroid was administered with indifferent results. Acacia was given at irregular intervals intravenously, as indicated in chart 1, approximately 1 Gm. being used per kilogram of body weight. Ampules of 30 per cent acacia and 4.5 per cent sodium chloride were used, diluted with equal volumes of distilled water. Some reduction in edema was noted after acacia therapy, with symptomatic improvement. The patient left the hospital for a period of three weeks, returning with marked generalized edema, fever and an infection of the upper respiratory tract. The urine still contained large amounts of albumin and numerous casts, but no blood. The total serum protein was 3.1 per cent, with the albumin fraction 1.1 per cent and the globulin 2.0 per cent. Acacia, salyrgan and ammonium chloride were given, in an effort to combat the increasing edema.

In spite of generous dosages of acacia the edema was always present, varying from day to day. The infection of the upper respiratory tract progressed to bilateral otitis media, the edema subsequently increased rapidly, and December 24 the patient died. A total of 285 Gm. of acacia was given intravenously. Necropsy was not permitted. Chart 1 shows the total protein values of the blood together with the amounts of acacia and the times it was given during the course of the disease.

CASE 2.—D. J., a girl, aged 2 years, was brought to the hospital, Sept. 8, 1934, because of swelling of the face, abdomen, arms and legs. Three days previously, swelling of the eyelids had been noticed.

Examination showed marked generalized edema, slight injection of the tonsils and pharynx, and mild paranasal sinusitis. The urine contained rather large quantities of albumin and many casts, but no blood. The hemoglobin was 70 per cent, red blood cells 4,800,000, white blood cells 15,000, with a normal differential count. The blood Wassermann reaction was negative. The serum protein was 3.96 per cent, with the albumin fraction 1.19 per cent and globulin 2.77 per cent. The nonprotein nitrogen was 28.6 mg. per hundred cubic centimeters and the cholesterol 667 mg.

A high protein diet was given and the infection of the upper respiratory tract was treated conservatively. Acacia was given intravenously in dosages of 1 Gm. per kilogram of theoretical body weight at irregular intervals, as shown in chart 1, ampules of 30 per cent acacia and 4.5 per cent sodium chloride diluted with equal volumes of distilled water being used. Marked reduction in edema was noted. During acacia therapy the serum total protein fell rapidly from 4 per cent to 1.9 per cent. The liver became enlarged four fingerbreadths below the costal margin and was very tender. Several transfusions were given to combat an increasing anemia. On October 11 there was a sudden increase in edema with hydrothorax; death came quickly and without fever as a result of embarrassment of respiration. The patient received a total of 129 Gm. of acacia intravenously.

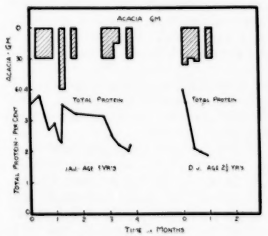

Chart 1.—Amounts of acacia given intravenously to patients J. A. J. and D. J., and the serum proteins.

At necropsy there was generalized edema of all the subcutaneous and internal connective tissues with ascites and bilateral hydrothorax. The liver was enlarged to twice its normal size and was grossly yellow.

Microscopic examination showed the increased size to be due to an engorgement of the liver cells with vacuoles, thought to contain acacia.* The kidneys were large, swollen and pale yellow. The essential lesion proved to be a deposition of fat in the convoluted tubules, there being very little evidence of glomerular damage. However, a few crescents were seen, as well as a small amount of blood within the tubules. The lungs were boggy and heavy and showed congestion and edema. There was marked enlargement of the mesenteric lymph nodes, and the malpighian corpuscles of the spleen were very prominent. There was microscopic evidence of acacia in the liver, spleen, kidneys, lungs, lymph nodes and bone marrow. Analysis of the liver and transudate fluids showed the presence of acacia in appreciable amounts. The acacia values were determined by hydrolysis of protein-free filtrates and the determination of the resulting pentose.[2] The heart blood plasma contained 2.1 per cent acacia, the pericardial fluid 0.6 per cent, the peritoneal fluid 1.1 per cent, the bile 2 per cent. Analysis of the liver showed 3.9 per cent acacia.

CASE 3.—D. S., a boy, aged 6 years, came under observation, June 11, 1932, because of swelling of the entire body. The

From the Department of Pediatrics and Medicine, State University of Iowa.

1. Hartmann, A. F.; Senn, M. J. E.; Nelson, Martha V., and Perley, Anne M.: The Use of Acacia in the Treatment of Edema, J. A. M. A. **100**: 251 (Jan. 28) 1933.

2. (*a*) Andersch, Marie, and Gibson, R. B.: J. Pharmacol. & Exper. Therap. **52**: 390 (Dec.) 1934. (*b*) Youngburg, G. E.: J. Biol. Chem. **73**: 599 (June) 1927.

onset occurred four months previously with influenza and an infection of the upper respiratory tract. Edema appeared in the face and ankles two weeks later, rapidly spreading to the remainder of the body and becoming progressively worse.

Examination showed generalized edema, subacute faucial and pharyngeal tonsillitis, mild sinusitis and pallor. The blood pressure was 96 systolic, 60 diastolic. The urine showed a rather large quantity of albumin and casts, but no blood. The hemoglobin was 70 per cent, red blood cells 2,450,000, white blood cells 6,150, with a normal differential count. The blood

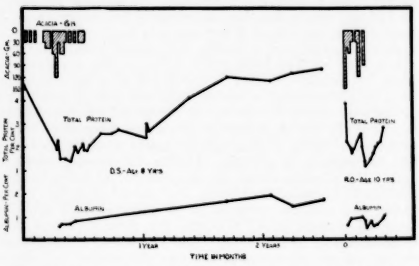

Chart 2.—Amounts of acacia given intravenously to patients D. S. and R. O., together with total serum protein and serum albumin.

Wassermann reaction was negative. The serum protein was 4.7 per cent. The nonprotein nitrogen was 53 mg. per hundred cubic centimeters and the cholesterol 320 mg.

A high protein diet was prescribed. The infection of the upper respiratory tract was treated conservatively. Blood transfusions were given frequently. Edema increased and acacia was given intravenously, approximately 1 Gm. per kilogram of body weight in concentrations varying from 6 per cent to 15 per cent. Ampules of 30 per cent acacia with 4.5 per cent sodium chloride diluted with distilled water were used. The edema varied, at first decreasing after acacia, but later very little effect was noted after repeated generous dosages of acacia. Thyroid and salyrgan had little effect. During a period of six months of acacia therapy the liver enlarged almost to the umbilicus and was very tender. Also during this period of acacia administration the serum protein fell to 1.5 per cent. Because of the enlarged liver, acacia therapy was discontinued after a total of 705 Gm. had been given intravenously. With repeated blood transfusions and treatment of the infection of the upper respiratory tract, gradual improvement was noted.

Dec. 12, 1934, two and a half years later, the patient was edema free and had no symptoms. The liver was still enlarged three fingerbreadths below the costal margin. The serum protein was 5.34 per cent, but the albumin fraction was only 1.75 per cent and the globulin 3.58 per cent. The urine still contained a trace of albumin but no casts or red blood cells. The values for the serum proteins together with the amounts and time of acacia therapy are shown in chart 2.

CASE 4.—R. O., a boy, aged 10 years, was brought to the hospital, Aug. 30, 1934, because of swelling of the entire body, decreased urine output, weakness, and difficult breathing. The onset had occurred seven weeks previously with puffiness of the eyelids, which was followed by gradually increasing generalized edema. Albumin had been found in the urine three weeks before he came to the hospital.

Examination showed generalized edema with marked ascites, pale skin, chronic faucial and pharyngeal tonsillitis and chronic paranasal sinusitis. The blood pressure was 115 systolic, 65 diastolic. The urine showed a large amount of albumin and occasional casts, but no blood. The hemoglobin was 80 per cent, red blood cells 3,980,000, white blood cells 7,500, with a normal differential count. The blood Wassermann reaction was negative. The blood analysis showed a serum protein of 3.85 per cent, a nonprotein nitrogen of 35.7 mg. per hundred cubic centimeters, and a cholesterol of 728 mg.

A high protein diet was prescribed. The infection of the upper respiratory tract was treated conservatively. Acacia was given intravenously in dosages of approximately 1 Gm. per kilogram of ideal body weight. Ampules of 30 per cent acacia with 4.5 per cent sodium chloride were used, diluted with an equal volume of distilled water. Reduction in edema was at first noted with acacia therapy. However, with repeated dosages the effect became less until little reduction in edema was observed. Thyroid and ammonium chloride were given in generous dosages without noticeable results. Repeated transfusions were found necessary to combat an increasing anemia.

During acacia administration the serum proteins fell to a low level of 1.68 per cent, rising to 2.56 per cent after acacia was temporarily discontinued and falling again to 1.12 per cent during a second course of acacia administration, as shown in chart 2. At this time the patient's liver enlarged to three fingerbreadths below the costal margin and became very tender. Marked ascites made breathing difficult, and abdominal paracentesis was necessary on several occasions. The first abdominal paracentesis was made twenty-four hours after the giving of 30 Gm. of acacia intravenously. The ascitic fluid contained 0.3 per cent acacia and the blood plasma 2.1 per cent.

Acacia administration was discontinued after a total of 492 Gm. had been given, and a subsequent rise in serum proteins was noted with a value of 3.27 per cent, December 17. The urine had continuously contained from 2 to 9 Gm. of albumin per liter by the Esbach method. Chart 2 shows the values for the serum proteins together with the amounts of acacia and the time it was given.

The patient is symptomatically improving with conservative treatment of the infection of the upper respiratory tract, high protein diet, blood transfusions and occasional abdominal paracentesis. The liver remains enlarged but slightly less so than during administration of acacia.

Deposition of acacia in organs of experimental animals, especially in the liver with resulting hepatic damage, has been reported.[2a] This, together with its presence in edema fluid, is sufficient to give rise to hesitation as to its continued use. Acacia fixed in tissue and having found its way to deposits of edema fluid is definitely defeating the purpose for which it was given. The decrease in serum protein, however, was the most alarming feature. If this was a result of the administration of acacia, the lowering of osmotic

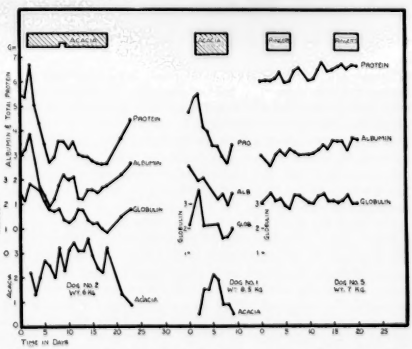

Chart 3.—Amounts of acacia given intravenously to dogs 1, 2 and 5, together with total serum protein, serum albumin and serum globulin.

pressure, caused by the loss of serum protein, more than nullified the effect of the acacia. It was not wholly clear, however, whether the decrease in serum protein observed in these children was caused by, or merely accompanied, the administration of acacia. To aid in answering this question four normal dogs were given acacia intravenously in dosages of 1 Gm. per kilogram

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of body weight, and a control dog was given Ringer's solution intravenously in corresponding volumes. Daily serum protein partition, blood acacia, hemoglobin and cell volume determinations were made. The serum protein determinations were made by the micro-Kjeldahl method.[3] The acacia values were determined by hydrolysis of protein-free filtrates and the determination of the resulting pentose,[2] hemoglobin was determined by the method of Newcomer, and cell volume values were obtained with a Van Allen hematocrit. The data obtained are shown in charts 3 and 4.

EXPERIMENTS ON DOGS

Dog 1 was given acacia daily, 1 Gm. per kilogram of body weight for seven days. The blood acacia reached a maximum on the fourth day and thereafter decreased rapidly, notwithstanding continued administration. The serum proteins, however, continued to decrease; the albumin fraction showing a continuous lowering, the globulin fraction being more variable but showing some decrease. The lowest total protein value was reached on the ninth day, a decrease of 52 per cent, the blood acacia at this time being very little higher than the value observed after one day's administration. The day after the

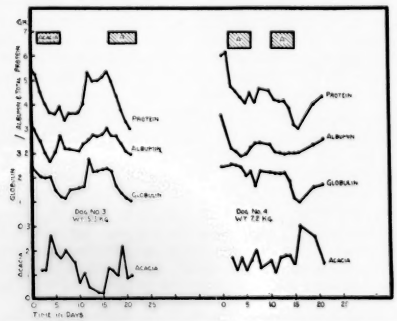

Chart 4.—Amounts of acacia given intravenously to dogs 3 and 4, together with total serum protein, serum albumin and serum globulin.

administration of acacia was stopped, both fractions of the serum protein showed a definite increase. Unfortunately this dog disappeared, and the blood could not be studied during the remainder of the recovery period.

Dog 2 was given acacia daily for seventeen days. The amount of acacia in the blood stream was higher after one administration than the highest value observed in dog 1. The blood acacia value fluctuated more or less but reached a maximum of 3.6 per cent on the fourteenth day of administration. After this, the acacia level fell for three days, rising again to 3.2 per cent on the last day of administration. With this dog the decrease in serum albumin was prompt and marked. The serum globulin decreased more slowly and reached its minimum later. After the albumin level had fallen to 0.95 per cent, a transient rise occurred, which was maintained for several days. During the remainder of the acacia period the albumin values tended to fluctuate between 1.0 and 1.6 per cent. The globulin values showed some fluctuation but seemed to be still decreasing at the time acacia was discontinued. A maximum decrease in total protein of 61 per cent was noted. During the recovery period both the albumin and the globulin fractions increased steadily but were not yet normal when the experiment was discontinued.

Dogs 3 and 4 were given acacia for periods of five days, then a rest period, followed by a second period of acacia administration. Dog 3 showed a maximum blood acacia value on the third day of administration, and acacia disappeared from the blood rapidly during the recovery period. The serum albumin decreased from 3.1 per cent to 1.68 per cent with three days of acacia administration, then rose again to 2.7 per cent even though acacia was being given daily. The recovery of the albumin level was slow, the value reaching approximately its initial level on the fifteenth day. The serum globulin fell more slowly at first, then more rapidly as the albumin values tended to become constant. The rise during recovery was also more rapid. With the second acacia period both albumin and globulin decreased rapidly and steadily, the globulin decreasing to 1.04 per cent in five days, the albumin to 1.95 per cent. A total protein decrease of 47 per cent was noted.

Dog 4 was allowed a smaller rest period between the two acacia periods. The blood acacia values in this dog were not high, but acacia remained in the blood at a more constant level after administration was discontinued. The highest acacia values were observed at the end of the second period of administration. In dog 4, practically the entire decrease of serum protein during the first period of acacia administration was due to decrease in albumin. During the five-day recovery period the albumin tended to rise, but the globulin fraction fluctuated irregularly. During the second five-day acacia period the albumin remained at 2 per cent; the globulin remained constant at 2.1 per cent for three days and then dropped rapidly to 1 per cent. Thus the fall of serum protein during the second acacia period was due almost entirely to decrease of globulin. There was a decrease of total protein of 52 per cent. When acacia administration was discontinued, both fractions of serum protein increased slowly.

COMMENT

It will be observed that the level of acacia in the blood of the four dogs varied considerably, even though all the dogs received 1 Gm. of acacia per kilogram of body weight daily for at least five days. Likewise, the apparent period of recovery varied, being least in dog 4 during the five-day interim between periods and most rapid, probably, in dog 3, whose total protein reached its original value on the fifth day, although the albumin did not reach its original value until the tenth day.

All dogs, including the control dog, showed a fairly uniform fall in hemoglobin and cell volume while receiving intravenous fluid and having blood samples drawn (about 6 or 7 cc. of whole blood daily). The fact that the hemoglobin and cell volume of the dog receiving Ringer's solution fell proportionately to those receiving acacia would discredit a dilution phenomenon due to acacia. The decrease in protein cannot be ascribed to added fluid due to acacia, for the sharpest drop often occurred before the acacia level had reached its maximum. In dog 1 the level of blood acacia actually fell from 2.1 per cent to 0.9 per cent in four days, while acacia was being given daily, the lowest serum protein value for this period occurring when the serum acacia was lowest. In dog 2 serum albumin decreased to 2.9 per cent while the acacia increased to 2.7 per cent, but a further increase of acacia to 3.6 per cent was accompanied by an increase in the serum albumin level. The total protein of dog 4 fell from 6.15 per cent to 3.02 per cent in fourteen days, while the level of serum acacia remained approximately constant, varying only between the levels of 1.2 per cent and 2 per cent. There would seem to be no accurate correlation between the fall in serum protein and the rise in serum acacia. All the dogs showed a distinct tendency to maintain the serum albumin level at or above 2 per cent. A decrease below this level was invariably followed by a rise, even though, as in dog 2, the increase could not be maintained. This is quite different from the serum albumin of the four nephrotic

3. Hawk, P. B., and Bergeim, Olaf: Practical Physiological Chemistry, ed. 10, Philadelphia, P. Blakiston's Son & Co., 1931.

children, which decreased to values below 1 per cent. None of the dogs exhibited an albuminuria, whereas all the children were losing albumin steadily through excretion in the urine. The protein of the control dog rose slowly during the experiment, probably because of the high protein diet the dogs were fed.

When the osmotic pressures of the lost serum protein and of serum acacia were calculated, it was noted that the values were not equal. In dog 1 there was a drop of 2.84 per cent of total protein in six days, which by Govaert's formula should exert an osmotic pressure of 10.95 cm. of water. During the same period the serum acacia rose only 0.4 per cent, which according to Dodds and Haines [4] should exert an osmotic pressure of only 0.8 cm. of water. The fall in serum protein does not appear to be due to an effort on the part of the body to preserve a constant serum osmotic pressure by lowering serum proteins by an amount sufficient to offset an equivalent osmotic pressure due to acacia. It would seem that serum acacia does not merely displace serum protein.

SUMMARY

The use of acacia intravenously to combat the edema of nephrosis was found to have only a transient or slight effect on the edema. Continued use of acacia led to a marked lowering of the serum protein and to the development of an enlarged tender liver. When the acacia therapy was discontinued, serum protein tended to remain low; the liver slowly resumed its normal size. In two patients, acacia was found in deposits of edema fluid; and in one of these coming to necropsy, appreciable amounts of acacia were found by chemical analysis in the liver, with evidence by microscopic examination of deposits in the bone marrow, lymph nodes, lungs, kidneys, spleen and liver.

In dogs the administration of acacia intravenously in dosages equivalent to those used in patients with nephrosis produced a marked lowering of the total serum protein, affecting both the albumin and globulin fractions. This reduction in protein did not appear to be a simple dilution effect. The exact mechanism of protein reduction remains unknown. However, the degree of reduction of serum protein was not related to the amount of acacia in the blood stream. The level of serum acacia varied markedly even with daily injections and could not be constantly maintained. When the daily administration of acacia was discontinued, the serum protein values of the dogs returned to normal much more rapidly than was observed with the nephrotic children.

The use of acacia intravenously in patients with nephrosis was not found of value and was associated with undesirable results.

4. Dodds, E. C., and Haines, R. T. M.: Biochem. J. **28:** 499, 1934.

Potential Capability of the Brain.—The most wonderful feature of the human brain is its extraordinary potential capability. An obvious instance is seen in the recent employment of the reading and writing mechanism and the spread of education, the potential capability for which exists in individually varying degrees among both the classes and the masses, and applies equally to the acquisition of knowledge and to its application to the arts and the crafts. The important, and also individually varying, factor is the grade of mind or general intelligence, which may vary from that of the imbecile or mental defective up to that of the genius, and whose psychomotor possibilities, according to its grade, are limited solely by opportunity and environment.—Bolton, J. S.: The Evolution of Mind, *Lancet* **1:**728 (March 30) 1935

THE ALLERGIC THEORY OF SO-CALLED THYMIC DEATH

GEORGE L. WALDBOTT, M.D.
DETROIT

In the lymphoid structures in cases of so-called thymic death Symmers [1] described areas which he held to be indicative of anaphylactic changes. Hammar [2] suggested repeatedly a state of unusual sensitivity as an underlying factor in so-called thymic death. Yet the anaphylactic conception of "thymic death" has not gained adherents very rapidly. This, I believe, is due to three facts: 1. Until recently, anaphylactic shock has been held to be a phenomenon occurring only in animals—not in man. 2. It was not believed to be produced by ways other than injection. 3. It was thought to be always associated with antigens of protein nature. That such irritants as drugs, anesthetics and thermic and even mechanical stimuli were involved in the production of thymic death seemed to weigh heavily against this theory.

Yet there are various observations that suggest an association of the thymic death problem with allergy. For many years past the medical literature has linked with the so-called thymic diathesis features that are now considered allergic, such as the tendency to nasal and bronchial catarrhs, to enlarged tonsils, adenoids and other lymphoid structures, to eczema, and to eosinophilia. Of particular significance in this respect is frequently a familial tendency to "thymic death" as attested by reports in the literature.[3] In children with a roentgenologically enlarged thymus true allergic manifestations often develop in later life.[4] In allergic families I have observed on several occasions sudden death which presented the clinical and pathologic characteristics of so-called thymic death. In recent autopsies on asthmatic patients, descriptions of enlargement of the thymus and other lymphoid tissue and a decrease of medullary substance of the adrenals have played an increasing rôle.[5] The same has been noted in cases of sudden death due to an overdose of serum and pollen.[6]

HUMAN ALLERGIC SHOCK

Since there has been very little known concerning human allergic [7] shock, it is necessary to present a few observations concerning this phenomenon. In men, allergic shock can probably best be studied in work with pollen extracts, for one is here dealing, as a rule, with a known degree of sensitivity, with a single antigen; namely, the pollen, and with a known dose. It was determined that the production of allergic shock depends primarily on three factors: first, on the degree

Read before the Section on Pediatrics at the Eighty-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., June 13, 1935.

1. Symmers, Douglas: Status Lymphaticus, Am. J. M. Sc. **156:** 40 (July) 1918.

2. Hammar, J. A.: The Thymus in Men: The Normal Organ, Ztschr. f. mikr.-anat. Forsch., 1926, supp. vol. 6; II. Das Organ unter abnormalen Körperverhältnissen, ibid. 1929, supp. vol. 16.

3. I have the records of four such families.

4. Waldbott, G. L., and Anthony, G. E.: So-Called Thymic Hyperplasia: IV. A Follow-Up Study of Thirty Cases, Am. J. Dis. Child. **47:** 34 (Jan.) 1934.

5. MacDonald, I. G.: The Local and Constitutional Pathology of Bronchial Asthma, Ann. Int. Med. **6:** 253 (Aug.) 1932.

6. Waldbott, G. L.: (*a*) Systemic Reactions from Pollen Injections, J. A. M. A. **96:** 1848 (May 30) 1931; (*b*) The Prevention of Anaphylactic Shock with a Study of Nine Fatal Cases, ibid. **98:** 446 (Feb. 6) 1932.

7. The differentiation between anaphylactic and allergic shock, if justified at all, is of little importance to the clinician and is therefore not applied in this paper. (Waldbott, G. L.: The Types of Human Hypersensitiveness, J. A. M. A. **102:** 1631 [May 12] 1934.)

of individual sensitivity—whether inherited, as for instance in cases of atopic asthma, or acquired, as in individuals who are sensitized by previous injections of horse serum; second, on the size of the overdose of the injected antigenic substance; third, on the rapidity of its absorption. As to the latter point, it was found that in sudden deaths following the administration of serum the accidental injection into a vein was responsible in the majority of cases.[6b]

The manifestations of allergic shock are subject to great variations. There is usually a predominance of respiratory and dermal symptoms. These are due either to true allergic edema of the urticarial type or to edematous hemorrhagic lesions, which are followed by necrosis. As Kline and Young [8] pointed out, the latter type of lesion may be considered as evidence of local anaphylaxis (Arthus phenomenon) and is apt to arise in

Shock due to contact of the lip with a minute particle of egg. Epinephrine effected prompt relief. (Courtesy of W. W. Duke, Kansas City, Mo.)

any part of the body. Outside of dermal edema and respiratory symptoms, these pathologic changes give rise to such additional manifestations as convulsions, hematuria and severe gastro-intestinal pains. It has been stated by Roth and Szauter [9] that the organs first reached by the antigen are those which are principally involved. Hence pulmonary and hepatic symptoms are more frequent, since the antigen is largely absorbed through the venous circulation and the first capillary systems that it reaches are those of the lungs and liver. If a previous allergic or nonallergic focus such as eczema, a tooth abscess or a sinus infection has been present, symptoms attributable to a flare up of this focus may arise.[10] The mode of introduction of the antigen into the body may also alter the symptomatology of shock. If it is given as an intravenous injection, collapse and death may occur so rapidly that no symptoms referable to a single organ can be noticed.[11] Two features are usually not sufficiently stressed; namely, that nonprotein substances may produce the same symptom complex as pollen or serum and that shock can be produced by ways other than injection. The latter fact is best illustrated by the accompanying illustration, which I owe to the courtesy of Dr. W. W. Duke of Kansas City, Mo. This presents a case of shock brought on by dermal absorption through contact of an (excoriated?) area of the lip with an exceedingly small amount of egg. In this case it was particularly noteworthy that an area of local edema was present at the site of contact (the raw area on the lip) similar to a local wheal that follows an injection of pollen and serum.

I have recently collected [12] records of thirty cases of allergic shock in which absorption of the antigen took place by routes other than injection. The following modes of absorption were held responsible: in thirteen cases, ingestion of food; in five the taking of drugs by mouth; in five, inhalation; in two, contact of the antigen with the skin; in three, cold and in two heat. Among the foods, egg was the most common source; among the drugs, acetylsalicylic acid.

OBSERVATIONS IN "THYMIC DEATH"

With these facts in mind, I reviewed a series of 104 autopsies from various hospitals in which the diagnosis of thymic death had been made.[13] Sixty of these cases were excluded because there were sufficient other indications to account for death. The remaining thirty-four were divided into three groups: those in which no cause whatever for death could be determined; those in which minor, usually nonfatal, conditions were coincident with death, and those in which the so-called thymic syndrome had developed, i. e., stridor, dyspnea and shock, followed by bronchopneumonia. In all these cases there were uniform changes in the lungs; namely, edematous hemorrhagic areas into the alveoli. According to the advancement of these lesions a more or less severe degree of necrosis was present. Traumatic emphysema alternating with atelectasis was noted, and occasionally eosinophil cells were present. In some cases there was what seemed to be a secondary enlargement of the right heart. In some, hypoplasia of the adrenals, particularly of the medullary portion, was noted.

INTERPRETATION

In interpreting these changes it seemed at first that I was dealing with an urticaria-like allergic phenomenon. However, the relative absence of eosinophils and the more or less marked degree of necrosis present was not compatible with this explanation. From true bronchial asthma, on the other hand, these lesions are so strikingly different that they do not admit a comparison. In reviewing the available literature on the pathology of anaphylactic shock in man, edematous lesions associated with necrotic areas in the lungs as well as in other tissues, particularly in the liver, are described as the most characteristic changes. This is particularly emphasized in the thorough description by Dean [14] of

8. Kline, B. S., and Young, A. M.: Normergic and Allergic Inflammation, J. Allergy **6**: 247 (March) 1935.
9. Roth, L., and Szauter, B.: Experimentelle Beiträge zur Frage der Organanaphylaxie, Klin. Wchnschr. **11**: 456-459 (March 12) 1932.
10. Waldbott, G. L.: Allergic Shock from Substances Other Than Pollen and Serum, Ann. Int. Med. **7**: 1308 (April) 1934.
11. Waldbott, G. L., and Ascher, M. S.: The Rôle of Accidental Puncture of Veins in the Production of Allergic Shock, to be published.
12. I am indebted to members of the Society for the Study of Allergy for the records of these cases.
13. Waldbott, G. L.: So-Called "Thymic Death": VI. The Pathologic Process in Thirty-Four Cases, Am. J. Dis. Child. **47**: 41-60 (Jan.) 1934.
14. Dean, H. R.: The Histology of a Case of Anaphylactic Shock, Brit. J. Path. & Bact. **25**: 305 (May) 1921.

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a case of death following the administration of tetanus antitoxin. These lesions correspond accurately with those in the present series.

If these data are interpreted as indicative of anaphylactic shock, the question arises whether or not enlargement of the thymus gland could be considered an allergic phenomenon. Such an assumption would not be in accordance with clinical observation, for routine x-ray films of patients with hay fever and asthma do not manifest an enlarged thymus gland. Skin testing on children with roentgen evidence of an enlarged thymus does not, as a rule, reveal positive reactions at the time when clinical evidence of an enlarged thymus gland is present. Yet, in later years, as Anthony and I [4] pointed out, true allergic symptoms do develop in these patients with positive skin reactions in an unusually large percentage of cases. This therefore suggests the possibility that enlargement of the thymus gland may constitute a preallergic phenomenon.

In order to shed further light on this problem I attempted to study the pathologic changes of asthma in its earliest development. I obtained autopsies on two infants in which true allergic asthma had been present for as short a time as three weeks and six weeks respectively.[15] Again, in these cases a striking resemblance to the changes of "thymic death" as well as of anaphylactic shock was found at autopsy. There are considerably less emphysema, little evidence of bronchospasm and a lesser degree of secretion of the mucous glands in early infantile asthma than in cases of long standing. This might be accounted for by the fact that the organism has not yet had sufficient time to develop such anatomic changes as a compensatory thickening of bronchial musculature, enlargement of mucous glands, eosinophilia and leukocytosis; in other words, lesions which in all probability represent evidence of an adjustment of the body to the functional disturbance present. On the other hand, edematous areas of the alveoli, necrosis and lymphocytic infiltration quite similar to what is found in acute anaphylactic lungs [14] are decidedly more predominant features. It then appears likely that "thymic death" represents a preallergic phenomenon that is probably identical with anaphylactic shock. During this preallergic state the system does not appear to be endowed with a sufficient defensive mechanism against the invading antigen. When this antigen is ingested, inhaled, injected, absorbed through the skin or possibly formed in the system as the result of mechanical or thermic stimuli, the patient succumbs suddenly instead of developing an asthmatic attack.

As an illustration of this theory I will give a brief report of the following instance, which I had occasion to observe:

F. M., a girl, aged 2 years, with a strong family history of allergy, developed typical stridor, dyspnea, cyanosis and shock followed by a low grade bronchopneumonia at the height of the ragweed season in 1933. Although the skin reactions for ragweed were negative, an attempt to desensitize the patient for ragweed during the following winter was made. This had to be abandoned because attacks similar to the first one followed each injection of the extract. At the beginning of the 1934 ragweed season a nasal catarrh developed, progressing rapidly to extreme shock and the child died within two days. At autopsy the thymus weighed 35 Gm.[16] and the lungs showed edematous hemorrhagic lesions associated with beginning bronchopneumonia.

15. Waldbott, G. L.: The Pathologic Changes in Asthmatic Infants, Am. J. Dis. Child. **49**: 1531 (June) 1935.

16. Repeated roentgen examinations failed to reveal evidence of thymic enlargement.

TREATMENT

With the present state of knowledge it is of course impossible to outline definitely measures of prevention and treatment. There is no remedy known at present that will counteract anaphylactic shock once it has developed.[17] It is true that urticarial lesions can be controlled by epinephrine. However, the aforementioned irreversible lesions, particularly the necrotic changes, have been but little influenced by this medicament in my experience. Concerning the administration of intravenous dextrose to counteract the edema, no definite data are at hand.

Of greater value may be the specific treatment; namely, the administration of extremely small doses of the sensitizing antigen in a manner similar to that in which allergic conditions are controlled at the height of their development. But this is possible only if one is familiar with the causative antigen and if death does not occur too rapidly. In most of the cases that I reviewed, death occurred instantly; in others, during the ensuing bronchopneumonia. Here such therapy may be in place, and it is perhaps the only specific treatment.

More valuable perhaps than treatment itself are measures of prevention. If one entertains seriously the allergic conception of thymic death, any child born to allergic parents could well be considered a potential candidate for it. This condition may or may not develop during its early childhood just as urticaria or hay fever may occur at any time of his life. All such measures as are proposed for prevention of asthmatic attacks should be considered. It is well to guard these children against exposure to weeds, flowers, face powder, sudden chilling, overheating, or the ingestion of foods or drugs to which they may be sensitive. Whether or not systematic skin testing will be successful in the recognition of the sensitizing agents is questionable. It seems that in this state skin sensitizing antibodies are not yet as prevalent as in cases presenting existing allergic manifestations. One may recall that, in some of the severe cases of fatal shock following injections of horse serum which I reviewed, previous skin tests were negative.

That a period of from two to three weeks between a previous absorption of an antigen and a subsequent one is instrumental in the production of shock in man as well as in animals has been brought out elsewhere.[10] This should be borne in mind in connection with the ingestion of drugs, with previous anesthesia and with such foods that are not eaten frequently, or with inhalation of air-borne substances. Concerning hypodermic medication, an attempt should be made by history and by clinical observation to determine a possible sensitization to the material to be injected. Particular attention should be directed toward the prevention of accidental intravenous injections.

Roentgen treatment of the enlarged thymus did not prevent death in several instances.[12] Many, however, believe that several small exposures of the thymus to x-rays produce a great deal of symptomatic relief, an effect which is comparable with that of small doses of x-rays over other lymphoid tissues, such as the spleen and the hilus glands in bronchial asthma.

SUMMARY

The evidence presented here suggests that the condition termed "thymic death" is a preallergic phenomenon similar to or identical with anaphylactic shock. This may be brought on by ingestion, inhalation, injec-

17. Hill, Justina H., and Martin, Lay: A Review of Experimental Studies of Nonspecific Inhibiton of Anaphylactic Shock, Medicine **11**: 141-224 (May) 1932.

tion or absorption through the skin of antigens to which unusual sensitivity exists. In addition, sensitization to cold and heat, mechanical stimuli and infection should be considered as exciting agents.

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ABSTRACT OF DISCUSSION

DR. B. S. KLINE, Cleveland: While I subscribe to the belief that thymic death may be an allergic or para-allergic reaction, the observations in thirty-eight cases in which status lymphaticus was the principal or accessory cause of death at Mount Sinai Hospital in Cleveland in the past twelve years support the view of Symmers, presented in 1918, that the most impressive lesion in these cases is the degeneration and necrosis in the germ centers of lymph follicles throughout the body, particularly in the intestine, in the lymph nodes and in the spleen. While there are frequently primary changes in the heart, arteries, adrenals and thymus, and also secondary changes in the heart or in the vascular system and in the pulmonary system, these are not as impressive as the striking changes in the lymphoid tissues. I would class these pulmonary changes, the hemorrhages, edema and round cell infiltration (not eosinophilic as in ordinary clinical allergies) as secondary manifestations. Incidentally, there were patients particularly those dying soon after the onset of symptoms, who showed negligible pulmonary changes. Concerning the nature of the degeneration and necrosis in the lymphoid tissues, it reminds one of specific parenchymatous changes observed in several types of injury: arsenic and mercury poisoning, hormones in excess, and changes in the liver in eclampsia and in the pancreas in diabetes mellitus. The lesion is unassociated with vascular changes of inflammation. It also reminds one of changes in rheumatic endocarditis, for instance, when there is no appreciable round cell infiltration but specific degeneration and necrosis of the endocardial cells. There are many views on thymic death and as many on the significance of status lymphaticus. I would say, having observed death in cases of slight burn or slight gastro-intestinal upset or slight operation done skilfully, that there does seem to be an underlying status lymphaticus that contributes to the death of the individual. The body in a case of thymic death has its lymphoid tissues damaged in one or more ways, possibly releasing some antigenic substance; and, following a subsequent release of the same or similar material or other material, changes occur that lead to shock, to secondary vascular and pulmonary changes and finally to death.

DR. A. GRAEME MITCHELL, Cincinnati: It seems to me that Dr. Waldbott has argued intelligently for the fact that a certain number of cases of so-called thymic death may be due to anaphylactic shock. I myself would prefer to accept this as quite possible, but I do feel that the question is not settled. There are still a certain number of cases of so-called thymic death in which obvious causes cannot be found but which may be linked up to some other type of disturbance of the thymus or lymphatic system. Dr. Waldbott's discussion at least presents the idea that anaphylaxis must be carefully excluded as the cause of death in so-called thymic cases.

DR. GEORGE L. WALDBOTT, Detroit: Dr. Kline suggested that the pulmonary changes may not be the cause of death in these cases. It is true that edema and necrosis may also be present in other organs. The following reasons, however, suggest that the pulmonary lesions are directly responsible for death: There are no changes as constant as those in the lungs; they are sufficiently extensive to interfere with respiration, and death is usually of the asphyxiative type. There is a question, as Dr. Mitchell states, whether or not allergy in the strict sense of the term is always responsible for the lesions in the lungs. In cases of toxemia of pregnancy, mercuric chloride poisoning and acute infections, Moon has described similar edematous and necrotic areas in the lungs, which he explained on the basis of shock from liberation of histamine-like substances. This is also the explanation of many investigators of the origin of the allergic wheal. Between this type of shock and true allergic shock there may be a relationship similar to that which exists between the histamine wheal and the true allergic wheal.

A GRADED COURSE IN MEDICINE AS PART OF THE DENTAL CURRICULUM

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AND
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PHILADELPHIA

To any one engaged in the practice of internal medicine or of dentistry today, it soon becomes apparent that in spite of the steady progress of both these professions there still remain uncultivated large areas in their mutual fields of clinical interest. This concept has been fully accepted for several years by leaders in medical and dental education in this and other countries. At the University of Pennsylvania the idea of incorporating into the dental curriculum a course in internal medicine was conceived by Dr. Alfred Stengel, professor of medicine and vice president in charge of medical affairs of the university, and Dr. Charles R. Turner, professor of prosthetic dentistry and dean of the school of dentistry. Such a teaching liaison has now been in operation for two years. It is our purpose in this communication to indicate to those engaged in medical and dental education the scope of these courses, the objectives that have been kept in mind, and the apparent results that have been obtained to date.

Our courses have been designed specifically to establish in the mind of the future practitioner of dentistry the idea that he should know at least the working vocabulary of the science and practice of internal medicine. Our aim is to transmit to the student of dentistry the idea of viewing a sick human being as much as possible after the manner of a competent internist. To date this has been our sole goal and therefore we have not attempted to teach methods of physical and laboratory examination as they are taught to students of medicine. In other words, we have endeavored to illustrate the benefits that may follow the closer cooperation of the professions of dentistry and medicine.

The courses that we have conducted to achieve this goal are constituted as follows: Throughout the entire second year of the dental course there is given weekly one lecture that aims to introduce to the student the major concepts in the internal medicine of today. Through careful selection of subjects it has been possible to cover, during this year, a considerable amount of subject matter. During the year an idea of the progress of the course in the student's mind is gained by written quizzes in addition to the written examinations at the end of the first and second semesters.

Throughout the third year of the dental course, biweekly clinics are given. In these during the course of the year the attempt is made to amplify the accumulation of the basic facts of internal medicine begun in the second year. More important than this, however, is the attempt that is made to illustrate, as completely as possible to the student, the general clinical characteristics of the most frequently encountered medical disorders. We have attempted to cover as wide a field of internal medicine as seemed reasonable, aiming constantly to stimulate the imagination and curiosity of the student into those channels that may indicate to him respects in which such information may be of

From the School of Medicine and the School of Dentistry, University of Pennsylvania.

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value in his practice of dentistry. In this course a written examination is given at the end of the first and second semesters.

Throughout the fourth year, groups of students, averaging about eight, meet in the presence of a member of the dental and of the medical faculties to discuss, at close hand, patients selected to illustrate the importance of correlating as fully as possible the best that these two professions have to offer. These classes meet once weekly and are arranged so that each student has eight such meetings during the year. These clinical conference groups are quite informal and are designed to promote pertinent discussion between the students and the teaching staff. At the end of the senior year a comprehensive oral examination in medicine is held.

Concerning the demonstrable results of these courses, it is obviously too early to speak. One result that does seem to be apparent is that the members of the dental and medical faculties of this university have come to cooperate more closely in their interchange of ideas in both clinical and investigative work. It is our belief that, if it has not succeeded in doing so already, this cooperative enterprise will show its fruits in the work of the graduates of the School of Dentistry. At the present time the subject matter presented in these courses, with the addition of data relating to internal medicine that may be of use to students and practitioners of dentistry, is being assembled in book form.

Clinical Notes, Suggestions and New Instruments

DESTRUCTION OF EPIPHYSES BY FREEZING

RUTH BLOUNT BENNETT, M.D., AND W. P. BLOUNT, M.D., MILWAUKEE

Disturbances of epiphyseal growth have been much studied from the clinical and experimental points of view in the past decade. Numerous proved and theoretical causes for osteochondrosis have been recorded. A careful search of the literature discloses only one case of stunted growth of the fingers as a result of freezing, however. Another instance (fig. 1) is reported here.

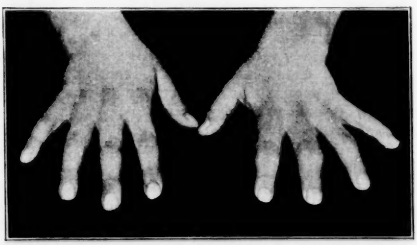

Fig. 1.—Appearance of hands in December 1932, showing the shortness of the digits and the fusiform swelling of the proximal interphalangeal joints of digits two, three and four.

A white girl, aged 8 years, seen in July 1932, complained of swelling of the proximal interphalangeal joints of the second, third, and fourth fingers of the left hand. The patient had frozen all the fingers of the left hand, with the exception of the thumb, in December 1931, with subsequent loss of the fingernails. There was no disability until the swelling appeared in June 1932.

From the Milwaukee Children's Hospital.

The developmental history was otherwise normal. With the exception of chickenpox in 1929 and scarlet fever in May 1932, the past medical history was negative. The Mantoux, Wassermann and microprecipitation (Kline modification) tests were negative.

When first seen there was swelling of the proximal interphalangeal joints of digits two, three and four, crepitation, and

Fig. 2.—Roentgen appearance of both hands in December 1932, showing generalized atrophy on the left, the complete destruction of the epiphyses of distal phalanges two, three, four and five, and middle phalanges two, three and four.

some limitation of motion. The third and fourth digits were crooked, with the apex of the angle medially and at the proximal interphalangeal joint.

The fingers were splinted temporarily, and the patient was seen for follow up in October and December 1932 and December 1934. Very little change occurred in the clinical appearance except for the greater variation in length. On the left, the corresponding fingers were shorter by the following amounts: index finger, 1 cm.; middle finger, 1.3 cm.; fourth finger, 1 cm., and fifth finger, 0.5 cm. There was slight habitual flexion deformity of the distal phalanges of the middle three digits.

Roentgen studies (fig. 2) were taken of both hands in the postero-anterior direction. On the right the epiphyses are normal in distribution, regular in outline, and still open. On the left there is slight generalized bony atrophy. The epiphyses of the first digit, the other four metacarpals and the proximal phalanges are otherwise normal in appearance. The epiphysis at the proximal end of the fifth middle phalanx is also normal. Those of the distal phalanges of the second, third, fourth and fifth digits as well as the middle phalanges of the second, third and fourth digits are entirely absent. The metaphyses at these points are markedly irregular in contour and appear moth-eaten. The same irregular appearance is evident on the contiguous surfaces of the neighboring phalanges where there is no epiphysis. The proximal interphalangeal joints of the third and fourth digits are angulated with the apex laterally.

COMMENT

Osteochondrosis of the phalangeal epiphyses has been well known since 1909, when Thiemann[1] reported a case of multiple involvement of the fingers. Following his lead, eight men published reports of similar cases. Most of these reports are in roentgenologic journals and have not attracted the attention of the profession at large. In 1933 Ryffel[2] summarized the literature and added three cases from one family. The changes of Thiemann's disease are almost entirely limited to the proximal end of the middle phalanges. The cause is as obscure as that of the osteochondroses elsewhere.

In 1930 Löhr[3] published the report of a case almost exactly similar to the one here reported, even to the onset six months

1. Thiemann, H.: Juvenile Epiphysenstörungen, Fortschr. a. d. Geb. der Röntgenstrahlen **14**: 79, 1909.
2. Ryffel, H.: Zur Thiemannschen Epiphysenerkrankung, Röntgenpraxis **5**: 423 (June) 1933.
3. Löhr, W.: Die Verschiedenheit der Auswirkung gleichartiger bekannter, Schäden auf den Knochen Jugendlicher und Erwachsener, gezeigt an Epiphysenstörungen nach Erfrierung und bei Hämophilen Zentralbl. f. Chir. **57**: 898 (April 12) 1930.

after freezing, the loss of finger-nails, and the involvement of the joints. He compared the roentgenograms to those taken of fingers following Volkmann's ischemia.

We also were interested in observing the similarity of this condition to epiphyseal destruction by freezing. A severe ischemia following supracondylar fracture resulted in an x-ray appearance almost the same as in this case except for the soft tissue contracture. The effect of prolonged ischemia, whether due to stopping of circulation by freezing or to mechanical obstruction, appears to be much the same as far as destruction of epiphyses is concerned.

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COLD URTICARIA FOLLOWING MEASLES IN THREE SISTERS

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In the investigations of cutaneous reactions and of peripheral vascular phenomena, the wheal has been a subject of much interest. Its appearance under various influences has confused the investigators in their effort to fix a single ultimate substance or cause as the direct etiologic factor. Interest in urticaria due to cold has been fostered in part by its apparent pathogenic difference from those urticarial states which result from internal factors, allergic influences, histamine injections, burns and the like.

During recent years many cases of urticaria due to cold have been reported, especially in the German and Viennese clinics, but the literature fails to reveal one instance of the occurrence of this condition following measles. Del Vivo [1] has reported a case in a woman, aged 24, in which it appeared and persisted following scarlatina at the age of 16.

Its simultaneous occurrence in more than one member of a family must be extremely rare, since only one such instance could be found: cases in two children reported by Jadassohn and Schaaf.[2] Therefore we are reporting the following cases, which we have observed:

In June 1934 three sisters, aged 8, 11 and 13 years, had measles. The course of the disease was typical, rather mild and uneventful, and no medicine was administered. None of the children had ever received serum injections. Immediately following recovery, it was noticed that all three girls would develop hives in areas of the skin exposed to cold, as, for example, following contact with a cold milk bottle. On one occasion the youngest child presented marked urticaria of the entire buttocks after accidentally sitting in a bucket of cold water. This phenomenon persisted throughout the summer and fall of 1934 and was brought to our attention by the mother, who is a graduate nurse and a good observer.

When the sisters were examined by us in November and December 1934, the condition was still present but appeared to be subsiding. Cubes of ice were placed on the backs of the hands. After two and one-half minutes the areas thus exposed became red, and after five minutes of contact small wheals appeared, which faded after five minutes. There was no dermographism. The oral mucosa was not and had not been affected by cold. The condition was the same in all three girls.

Physical examination revealed no other abnormality in these children. Laboratory data also were uninformative, excepting eosinophilia (7, 10 and 13 per cent) in each case. The presence of eosinophilia must be considered as a quite usual accompaniment to the urticarial state. (Stool examinations failed to reveal evidence of any parasitic infestation.)

The fact that three sisters should begin to evince this abnormal skin reaction simultaneously and apparently as a result of their having passed through an attack of measles opens a field of speculation. However, it seems most probable that the so-called H substance was elaborated or freed in greater amounts in the skin sensitized by the roseolar disorder.

The familial distribution of allergic tendencies requires no emphasis. The chief interest in these cases lies in the development of an identical (allergic?) manifestation in all three simultaneously and probably as a result of the same factor.

Since we made these observations the urticarial tendency has continued to subside, and now (June 7, 1935) it has disappeared entirely.

1. del Vivo, G.: Contributo allo studio dell'orticaria da freddo, Dermosifilografo **2**: 387 (Aug.) 1927.

2. Jadassohn, Werner, and Schaaf, Fritz: Kälteurtikaria bei zwei Geschwestern, Dermat. Wchnschr. **86**: 563 (April 28) 1928.

Special Articles

THE USES AND ABUSES OF MODERN GLAND PRODUCTS IN GYNECOLOGIC DISORDERS

CLINICAL LECTURE AT ATLANTIC CITY SESSION

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If this paper dealt with gynecologic endocrinology instead of gynecologic organotherapy, it would be difficult to crowd within its restricted limits a recital of the brilliant accomplishments in that field, constituting as they do one of the most outstanding recent chapters in physiology. It is not so difficult to find space for the accomplishments in the field of organotherapy. This may seem strange, for it might be expected that from the great mass of new knowledge concerning reproductive physiology there should be a rich yield of facts translatable into therapeutic practice.

The best way to teach organotherapy is to teach endocrinology. Without some knowledge of the latter, it is utterly impossible for the physician to employ hormone products intelligently; with such knowledge he can at least know whether a given plan of endocrine treatment is rational and sound or whether it is palpably irrational and quite sure to be ineffective. This is not to say that treatment which seems quite rational is sure to be effective, for this unfortunately is not true. It does mean, however, that certain methods of treatment can be carried out with no loss of dignity or self respect, while others will at once be rejected as obviously unsound.

The most effective method for correcting the evils and abuses of gynecologic organotherapy is to teach the members of our profession at least the elements of reproductive physiology. Feeling as I do about this, I am frank to say that I would much rather discuss reproductive endocrinology than gynecologic organotherapy, the subject that has been assigned to me. For a fuller discussion I may refer to several previous publications.[1]

Thus far the chief contributions to therapy made by recent scientific investigations in this field have been of negative rather than of positive value. They have shown the incorrectness and often the absurdity of many of the older methods of gland treatment and the worthlessness of many of the preparations formerly so widely employed for this purpose. This, after all, has been no mean contribution.

If one looks back detachedly over the poorly marked road that has been traveled, it now seems clear that ovarian therapy got off to a bad start. It was "dat ole

Read before the General Scientific Meeting at the Eighty-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., June 11, 1935.

1. Novak, Emil: Some Newer Aspects of Reproductive Physiology, Am. J. Obst. & Gynec., to be published; Endocrine Mechanisms in Functional Gynecological Disorders, Surg., Gynec. & Obst. **60**: 330 (Feb.) 1935; Gynecological Aspects of Endocrinology, Brit. M. J. **2**: 553 (Sept. 23) 1933.

debbil" analogy which was responsible for the first efforts at ovarian therapy in the old Landau clinic in Berlin in 1894. Some years previously Murray and others had demonstrated the brilliant results of thyroid feeding in cases of thyroid hypofunction. Why, then, should not ovarian feeding give equally good results in the treatment of conditions of ovarian underfunction? This was the first false step, and it is appalling to think how many billions of ovarian tablets had to be ingested before the profession was convinced of the inefficacy of the method. As a matter of fact this grandiose therapeutic experiment would still be in progress had it not been for the cruel disillusionment emanating from the laboratories. That there is still a vogue for this form of treatment is an excellent illustration of the painful slowness with which new knowledge permeates professional practice.

With the discovery of the functional importance of the corpus luteum by Fraenkel in 1903, the new fad of corpus luteum therapy had to run its course as inevitably as a case of measles, side by side with the practice of giving ovarian tablets or capsules or, later, ovarian residue in one form or another. All these substances were rather costly to the patient, and the national cost of such medication would total a figure that would not be unimposing even in this day of stratospheric finance.

All this, of course, is "old stuff"; but it is the stuff that forms the background of gynecologic organotherapy as we know it now, and it can no more be disregarded in an analysis of the latter than can tradition, folk lore or superstition in the development of our national mind. While the cold truth is that all these older preparations for oral administration are entirely or almost entirely inert, the person who believes they are no longer used, or that there are no longer doctors with pencils which reflexly write for ovarian tablets at the mere mention of any functional menstrual disorder, would believe that there are no longer people who carry horse-chestnuts in their pockets to ward off rheumatism.

An entirely new trend was given to ovarian therapy with the discovery of the follicle hormone, for here, for the first time, we were dealing with a purified principle of undoubted potency even in the cold glare of the laboratory. It is no wonder that the clinician, so completely lacking any satisfactory treatment in the very large class of functional gynecologic disorders, at once sat up and took notice, for here there seemed something tangible and intelligent to work with. There thus began another phase of ovarian organotherapy dealing with hormones rather than with gland preparations, but equally disappointing, and for reasons that could have been foretold at the time, and were foretold by those who were at all familiar with the physiology of menstruation, and with the differences which it exhibits from the estrous cycle in the lower animals.

To produce estrus in the lower animals, only one ovarian hormone, that of the follicle, is necessary, so that the administration of the latter in proper dosage may be expected to produce the phenomenon even in the castrated animal, as it does. But to produce menstruation in the human female, two ovarian hormones are necessary, that of the follicle and that of the corpus luteum, and they must be properly balanced in a quantitative way and must operate in a certain sequence. Furthermore, they must be given in huge dosage, if they are to bring about in the uterus an actual simulation of menstrual changes. This has been shown by experiments on castrated women, the adequate dosage being apparently from 200,000 to 300,000 mouse units of estrin and 60 rabbit units of progestin. Parenthetically, it may be added that eighty human corpora lutea would be required to yield one rabbit unit of progestin, for here, as with many other endocrine glands, there is a vast difference between storage and production capacities. Any one interested in arithmetic and knowing something of the present-day market value of these preparations can readily figure out that the reproduction of a single menstruation by this treatment would cost several hundred dollars.

Another woful shortcoming of ovarian therapy in cases of ovarian deficiency is the fact that it is purely substitutional and that it does not in any way start up the ovarian menstrual machinery. This is in keeping with the well known endocrinologic law that no ductless gland is stimulated by its own secretion. Moreover, the evidence indicates that excessive or prolonged estrin therapy actually inhibits the activity of the anterior hypophysis, on which depends the efficiency of the pelvic menstrual mechanism.

Still another factor, as I shall later reemphasize, is that estrin treatment in itself has no more stimulating effect on ovulation than it does on menstruation, so that its use in most cases of the sterility so often associated with amenorrhea is irrational and unsuccessful.

Finally, in the treatment of gynecologic disorders of various sorts with estrin, one must contend with the possible factor of antihormone production, which may perhaps explain the apparent refractoriness of the organism to long continued endocrine therapy. This bedeviling concept, recently suggested by Collip and his associates, is still too new and unconfirmed to justify its discussion except as a possibility to be contended with, as if there were not already enough such difficulties to plague the endocrinologist. One may be permitted a sigh of relief that recent investigations appear to indicate the incorrectness of the antihormone concept as applied to theelin.

In view of the dominance of the anterior hypophyseal lobe over gonadal function, is there any way in which a lazy or totally inactive pituitary may be restored to normal activity? If there were, the problem, at least so far as ovarian hypofunctional conditions are concerned, would be much simplified. In spite of the assurance with which primary ovarian deficiency is spoken of, it is probable that in the majority of such cases the ovary would be capable of responding to the pituitary stimulus if the latter were forthcoming. But there is no known way of stimulating anterior lobe activity except the rather empirical and uncertain method of irradiation. No one knows just how the latter acts or on what elements it produces its chief effect, so that its employment in functional disease can only be compared to the employment of the "alteratives" so popular with the saddle-bag practitioner of a former day.

For substitutional purposes pituitary substances are often employed by mouth, without benefit, according to the best available evidence, unless huge doses are employed, and even then there is considerable reason to doubt their efficacy. The anterior pituitary-like substances now so popular because of their undoubted gonadotropic effects in animals have been without noteworthy effect as substitutes for the deficient anterior pituitary hormones, as might perhaps be expected, since

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they are now believed by most investigators to be chiefly of chorionic rather than of pituitary origin.

These, then, together with thyroid extract, are practically all there is to work with in efforts at gynecologic organotherapy. Some of the commercial forms of these substances I have enumerated in a recent paper, so that I shall in this paper talk in the general terms of physiologic principles rather than the commercial preparations that actually or purportedly represent these principles. Since the writing of the paper referred to, there have been a few additions to the armamentarium of ovarian therapy. The chief changes in this field are (1) at least some reduction in price, (2) a growing tendency to adopt the international unit of dosage for estrin in place of the rat unit, which had been almost universally employed in this country, (3) the production of more potent estrin preparations, (4) the availability of commercial preparations of progestin, and (5) an effort to prepare the anterior pituitary sex principles from the gland itself instead of utilizing the anterior pituitary-like principles found in the urine of pregnant women. While reports of the use of these newer preparations are beginning to appear in the literature, these have so far been too meager to justify any conclusions as to whether they will bring about any improvement in results. For reasons that I have discussed, no matter how much the ovarian hormone preparations are improved they would still fill only a limited need in most of the indications for which they have been recommended.

Since this review is to be an evaluation of the rationale or lack of rationale of present-day glandular therapy for gynecologic disorders, the most logical plan would seem to be to set forth my comments under the heads of the various conditions for which organotherapy has been recommended.

AMENORRHEA

As I have had occasion, in a recent paper in THE JOURNAL,[2] to discuss at length the use of estrogenic substances in the treatment of amenorrhea, only a brief epitome need here be included. Organotherapy is useful in the definitely hypothyroid cases but of little value in other types, and the latter make up by far the largest group. The old-fashioned tablets, capsules or powders of ovarian substance, ovarian residue and corpus luteum substance are practically inert, so that there is no excuse for their use at present. Estrogenic preparations, such as the commercial theelin or amniotin, have little value for reasons that I have already enumerated. If they are used for this indication, and there are probably few gynecologists who do not at times feel driven to this by the lack of any treatment more logical or more successful, they should be employed in very large doses if the patient can afford this. If economy makes necessary the usual small doses, there is little reason to expect good results, so that the treatment is to be looked on as little more than a placebo to the patient and a mental sop to the physician.

To be as nearly rational as possible under present conditions, the administration of estrogenic substances in amenorrhea should be immediately followed, with some overlapping, by the hypodermic administration of preparations of the gonadotropic substance from the urine of pregnancy, such as antuitrin-S or follutein, or one may try one of the progestin preparations, which are beginning to appear. The most that can be hoped for even then is a single menstrual period, so that the treatment would have to be repeated for each menstrual period, a plan that is obviously not practical and of which the patient will soon tire. She will usually then pass on to some other physician, who with incipient enthusiasm will tackle the problem along similar or even more ineffective lines. Every now and then she may have a period of bleeding, perhaps spontaneously or perhaps as a result of treatment, her physician at that time being made to glow with a pride and enthusiasm which commonly fades when the amenorrhea again recurs. The perseverance of many patients is amazing, their peregrinations being checked only after many years of disappointment, or by advancing years, or until they are fortunate enough to fall into the hands of a physician who will take the trouble to explain to them that amenorrhea in itself is harmless and that, unless the factor of the frequently associated sterility is the all important one, as it unfortunately often is, there is not much to be hoped for from ovarian organotherapy in its present state. My own policy in such cases is to emphasize to the patient that such problems are being intensively studied throughout the world and that it is quite possible that these studies may before long yield some more effective organotherapy than is now available.

DYSMENORRHEA

It is very probable, though not clearly established, that in some cases of primary dysmenorrhea the endocrinopathic factor is the important one. There are many physicians even now who treat such cases, and indeed any functional gynecologic disorder, with the older forms of desiccated ovarian or corpus luteum substances given orally. For this there is not the slightest excuse to be made. There are others who use the estrogenic substances, usually just because they are the up-to-date forms of giving the ovarian principles and not because any one has any idea as to how they can do good in dysmenorrhea. The preponderance of what little evidence there is on the subject would indicate that they might do harm, for most investigators believe that estrin increases and progestin decreases uterine contractility. On this basis there seems to be some reason to employ progestin or the pregnancy urine preparations as a part of the treatment of primary dysmenorrhea. Far more important in the present state of organotherapy is an effort to correct the constitutional, environmental or psychogenic factors that are so often concerned in the causation of dysmenorrhea.

FUNCTIONAL UTERINE BLEEDING

For functional uterine bleeding, organotherapy appears to have established itself as of some value, although our imperfect knowledge concerning endocrine mechanisms entails a certain degree of empiricism in such treatment. Furthermore, the results are far from uniformly good. The largest group of functional cases are those characterized by a failure of ovulation, with abnormal persistence of estrin activity and with absence of the corpus luteum and its characteristic hormone, progestin. This syndrome occurs most frequently in women approaching the menopausal epoch but is encountered at any age during reproductive life and is frequent in girls during the pubertal and adolescent years. The endometrium in such patients shows a greater or less degree of proliferative but always nonsecretory change and in the typical case presents the characteristic Swiss cheese gland pattern of hyperplasia.

2. Novak, Emil: The Therapeutic Use of Estrogenic Substances, J. A. M. A. **104**: 1815 (May 18) 1935.

Mild cases of this disorder are frequent, and often the endocrine balance is spontaneously readjusted without treatment of any kind. When the bleeding is severe, organotherapy is indicated, and in very young individuals, in whom there is no reason to fear cancer, this need not be preceded by diagnostic curettage, though pelvic examination, either vaginal or rectal, is always wise. The most frequently helpful treatment is with one of the anterior pituitary-like preparations made from the urine of pregnant women, the two chief commercial forms being antuitrin-S (Parke, Davis & Co.) and follutein (E. R. Squibb & Sons). These were originally suggested because of their luteinizing effects on the ovaries of laboratory animals, in the hope that they might have a similar effect on the human ovary, which might thus be stimulated to supply the progestin deficiency. Progestin itself would be more rational and probably more effective if an unquestionably active preparation were available for clinical use. Although it is now known that these anterior pituitary-like substances do not in the human being bring about luteinization, the fact remains that in many cases they are useful in checking or controlling bleeding. Just how this occurs is not known, though it is probably dependent on some interaction between the ovarian and pituitary secretions. There seems to be no doubt that the underlying disturbance in such cases involves the anterior hypophyseal lobe, so important as the regulator of ovarian function.

When the pregnancy urine hormones are used in the treatment of functional hemorrhage it seems best to withhold them until the onset of a bleeding phase, for often the bleeding is periodic. From 100 to 200 units may then be given intramuscularly each day, for from one or two to five or six days, depending on the severity of the bleeding and the effect of the treatment. If bleeding is of the prolonged metrorrhagic type, treatment should be commenced at once. When those preparations alone are ineffective, the simultaneous daily injection of the ordinary posterior lobe extracts, in doses of from 0.5 to 1 cc., will sometimes enhance their value.

In women near middle life, and especially when the bleeding has been prolonged and free, curettage is advisable, because it usually checks the bleeding at least temporarily, and because it eliminates more serious intra-uterine lesions, such as cancer. When bleeding recurs after curettage, it may be treated organotherapeutically, according to the foregoing plan; but, if the woman is approaching the menopausal age, the sensible plan is to abolish the menstrual function by means of x-rays or radium. The latter should not be employed in young women except as a last resort, and then only by those sufficiently expert to regulate the dosage in such a way as to minimize the risks of permanent abolition of the reproductive and menstrual functions.

In some cases of functional bleeding, especially when there is definite evidence of hypothyroidism, thyroid extract is indicated, and it may be of value in the relief of the bleeding, though such cases have not been numerous in my experience. Many other forms of organotherapy have been suggested, such as the use of estrin, parathyroid extract, insulin or mammary extracts, but neither the rationale nor the results of such plans have commended them for general usage. The plan that I have suggested leaves much to be desired, and its general results are not at all consistent; but it has been detailed because the available evidence warrants the statement that it gives better results than any other plan of organotherapy. There is little question that it will sooner or later be superseded by some more effective plan, perhaps by the substitutional use of progestin, especially since there now seems to be a real hope for the synthetic preparation of the latter.

VASOMOTOR MENOPAUSAL SYMPTOMS

Although various explanations have been suggested for the mechanism of the curious vasomotor flushes, sweats and heat flushes that characterize the menopause, nothing of a definite nature is known. There is, however, little doubt that the immediate factor is the withdrawal of ovarian function, and considerable evidence to indicate that the most important factor is the cessation or marked diminution of estrin production. I need mention only the following observations in support of this view: 1. These vasomotor phenomena are usually mild or absent altogether in that phase of the menopause during which estrin is present in excessive amount, especially when this excess is expressed in the form of functional uterine bleeding. They are more apt to be troublesome in the stage of estrin deficiency, which, according to Zondek, follows that of excess. 2. In a number of cases of granulosa-cell carcinoma in women many years after a normal menopause, which had been accompanied by characteristic vasomotor symptoms, a second menopause, with again characteristic symptoms, has been observed. These tumors characteristically produce only estrogenic substance.

It is scarcely necessary to add that cessation or marked diminution of ovarian function is accompanied by striking changes in the anterior lobe, changes which, especially in the surgical menopause, are quite similar to the well known castration hypertrophy of the anterior lobe so well established by laboratory experiments. It seems quite possible that these pituitary changes, with some unknown repercussion through the cerebral and sympathetic centers, are responsible for the vasomotor phenomena, though one can only speculate as to the pathways and mechanism that are involved. But the fact remains that the estrin deficiency, especially if sharp or sudden, is the conspicuous hormone phenomenon associated with such symptoms. Hence the administration of this hormone in an effort to ease the patient over the transition phase seems logical when symptoms are sufficiently severe.

There is no phase of woman's life concerning which the public cherishes so many incorrect ideas as it does concerning the change of life. Hence the apprehensiveness with which many women approach this epoch. A physician can render his women patients a great service by explaining the normality of this phase, stressing the fact that in most cases no medication of any kind is necessary, because of the absence or mildness of the symptoms. Much can also be accomplished by insistence on the avoidance, so far as possible, of stress, worry and anxiety, as well as the importance of maintaining physical health on as high a level as possible by such measures as rest and recreation. Simple nerve sedatives, such as the bromides, are often valuable adjuvants and may be all that is required in the way of medicine. In spite of all this, a minority of women are made very miserable for many months, and even a number of years, because of the severity of the vasomotor symptoms. What can be done for these? If there is anything more nearly rational or more effective than estrin therapy now available for this indication, I do not know of it. With full regard for the necessity of eliminating the subjective factor in the

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evaluation of results, and with full knowledge of the lack of brilliance in these results, my experience has been that many patients can be very materially helped by this plan of treatment, combined with the general measures already mentioned.

The admittedly poor results of ovarian therapy in general, and its lack of rationale in so many of the indications for which it has been employed, are no doubt responsible for the completely nihilistic attitude expressed by some writers, concerning even the few indications in which the hormone does not seem illogical or wholly ineffective. Without the slightest feeling of cocksureness on the subject, I for one expect to employ hormone therapy as a part of the management of some menopausal cases until a more effective or more rational method becomes available. I have an idea that most of the scoffers will do the same.

There would seem to be no excuse for the oral administration of the older forms of desiccated preparations of whole ovary, corpus luteum, or ovarian residue, when commercial preparations of the hormone, with demonstrated laboratory potency, are now available. This hormone can be given either hypodermically or orally, the effective dose by the latter route being about five times that required by the hypodermic method. The available preparations, the doses and the general plan of treatment suitable for menopausal cases have been fully discussed in a recent paper, so that they need not be detailed again here.

STERILITY

While our knowledge of endocrine factors in sterility is very meager, there is no doubt that they play an important part in many cases of this frequently distressing female ailment. It seems hardly necessary to say that such an etiology should never be assumed until a thorough study of the male and female partners has eliminated all the other more common possible causes of the condition. If hypothyroidism is demonstrated in either partner, appropriate thyroid therapy is clearly indicated and pregnancy not infrequently follows. Even if the basal metabolism rate is normal there is no objection to small doses of thyroid, and even here good results are at times observed. When, as is so often the case, the sterility is associated with an endocrinopathic amenorrhea of what might be called the cerebrohypophyseogonadal variety, the treatment is that of the latter, and the results are equally poor. In this group thyroid therapy is likewise commonly employed. It is probably of more frequent value than the administration of the ovarian or gonadotropic preparations so widely used.

Two other endocrine aspects of sterility may at least be mentioned. One is the possible absence of ovulation even though menstruation is essentially normal in rhythm and amount, and even more if it is somewhat irregular and free. That in some of these cases the sterility is due simply to the fact that no eggs are being given off by the ovaries no longer permits of doubt, as I have discussed in a recent article. But we do not as yet know what the actual cause of ovulation is. For that matter, it seems likely that it is neither the follicle-ripening gonadotropic hormone (prolan A), as some suggest, nor the luteinizing hormone (prolan B), as others believe, but that it is dependent on some delicate quantitative balance between these two substances. Hence the present difficulty of correcting this anovulatory mechanism, and the fact that one must for the present resort to such experimental therapeutic measures as the administration of the prolan-containing preparations at or near the usual time of ovulation.

Finally, even if the egg is given off, there is no certainty that it is fertilizable. The doctrine of "defective germ plasm" seems to have gained the acceptance of the most conservative embryologists. If the inferiority of the egg is not quite so pronounced, it may, so to speak, take the sperm charge, but "idiopathic" abortion or miscarriage takes place at one stage or another of pregnancy. If the germ plasm is still less inferior in quality, the pregnancy may go to term, with stillbirth or death shortly after birth, while in the ideal cell union the germinal momentum is sufficiently strong to carry the gestation product through the usual human span. Needless to say, the quality of the male germ is just as important as that of the female. The fertilized egg is the resultant of the fertilization capacities of both male and female partners, and in either one of these sterility may be only relative instead of absolute. From a practical standpoint, the only suggestion that can be made when such a factor as defective ova is suspected is to endeavor to improve the constitutional and endocrine status of the couple in every way possible. As regards the constitutional element, this often means the correction of such factors as diet, psychic conditions and overwork.

GONORRHEAL VULVOVAGINITIS OF CHILDREN

The treatment of the troublesome and frequent gonorrheal vulvovaginitis of children has long been a *bête noire* to gynecologists, so that there has been considerable interest in the suggestion of Lewis that estrogenic therapy might, through its biologic effect on the vaginal mucosa of the child's vagina, be of therapeutic value in this form of vulvovaginitis. Suffice it here to say, as I have done more in detail elsewhere, that the treatment seems rational and that, in the light of such reports as have been made available, it merits continued usage, at least until its efficacy can be more satisfactorily proved or disproved. As the method is now being tried out fairly extensively, it should not be long before more definite conclusions than are as yet available can be arrived at. Studies now being made in the outpatient clinic at the Johns Hopkins Clinic by TeLinde and Brawner indicate not only the usual effectiveness of the treatment but that the most effective way to administer the hormone is by the vaginal route, through the use of vaginal cones containing the active principle.

OTHER INDICATIONS

There are a number of other indications for which organotherapy has been suggested and employed, but these need not be discussed here, because of the indefiniteness of the indications and the poorness of the results. Moreover, this poorly defined group has been briefly discussed in my previous paper. In this I also described the employment of the anterior pituitary-like hormones of pregnancy urine in the treatment of undescended testis. In this condition, in which surgical treatment is not always as successful as might be wished, the reported results justify the statement that operation should not be resorted to without first trying the organotherapeutic plan.

SUMMARY AND COMMENT

Sifting out the worthwhile evidence available on the general subject, therefore, it may be concluded that organotherapy is apparently of value in the treatment

of functional bleeding and of the menopausal symptoms. Ovarian therapy seems worthless in the treatment of amenorrhea, though thyroid treatment is of value in an indeterminate though apparently not large proportion of cases. In dysmenorrhea the use of the anterior pituitary-like pregnancy hormones is helpful in some cases, though the correction of constitutional, psychic and environmental factors should never be overlooked and is far more frequently important for successful results. The use of organ extracts, especially thyroid, is fully justified in cases of sterility, but only after thorough consideration and, if possible, elimination of other etiologic factors. The available evidence indicates the value of organotherapy in cases of gonorrheal vulvovaginitis in children, and for the nongynecologic indication of undescended testes.

All in all, therefore, no great hardship would be worked on the female sex if ovarian organotherapy were suddenly blotted out. Indeed, this might not be undesirable if the new therapy that would be sure to arise could be built up on the substantial basis of what has actually been established in recent years concerning reproductive physiology, and what is reasonably sure to be learned in the years just ahead of us. Such a dream of starting all over again is just as utopian in this as in other fields of therapy, for always the harassed physician is faced with the necessity of doing the best he can under existing conditions when, as is so commonly the case, a scientifically ideal plan is not possible. But no physician can treat endocrine disorders intelligently unless he knows something of endocrine functions and interrelationships. The subject is admittedly vast, confusing and rapidly changing. There is thus a temptation for the busy doctor to dismiss the whole thing as a hopeless muddle and to depend on the literature of manufacturing houses for quick and often superficial information on the subject. And yet it is easy, without great effort, for every physician to familiarize himself with the essential elements of the subject through the numerous summarizing reviews that have appeared, none being better than the series of articles on "Glandular Physiology and Therapy," which have just been published in THE JOURNAL. In this field, almost more than any other, those qualified to do so can render a genuine service by summarizing, clarifying and appraising the subject for the benefit of those who, through lack of time or opportunity, cannot otherwise keep in touch with the rapid developments in this field.

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Sir Patrick Manson's Diary.—Manson commenced his Diary in June 1877 and continued to make entries therein with commendable regularity for another twenty years. The Diary is a plain ledger, bound in buckram, and appears to have been acquired by Manson on his advent to Amoy, for on the outer cover can still be deciphered "Imperial Maritime Customs, Amoy." The book measures 13 by 8 inches and contains 612 closely written pages. In these pages there are gathered together scattered observations on the main subjects for which Manson's name became world famous. It was apparently his habit to record his observations and experiments daily in an orderly fashion and to keep transcripts of all the letters he wrote to correspondents such as Timothy Lewis, Spencer Cobbold, Leuckart, Lister and the *Lancet*. Inserted too, between these pages, are numerous original drawings. The Diary is therefore replete with scientific, historic and human associations. Naturally the main interest radiates round his first love—filariasis.—Manson-Bahr, Philip: A Commentary on the Diary Kept by Patrick Manson in China and Now Conserved at Manson House, *Tr. Roy. Soc. Trop. Med. & Hyg.* **29**:79 (June) 1935.

GLANDULAR PHYSIOLOGY AND THERAPY

COMMERCIAL GLANDULAR PRODUCTS

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NOTE.—*This article concludes a series of thirty-two articles on glandular physiology and therapy by various authors, published under the auspices of the Council on Pharmacy and Chemistry. The series of articles will be published in book form.*—ED.

Perhaps no group of pharmaceutical preparations in recent years has been the subject of such extravagant claims as that comprising allegedly active materials derived from various glands, nonglandular organs and body fluids. Hardly a tissue or fluid of the body has escaped desiccation or extraction; substances so obtained are marketed in pills, tablets, capsules, vials and ampules for introduction into the body by every conceivable route. Only a small percentage of the many preparations are known to contain active material; and with the few exceptions (thyroid, liver, stomach, adrenal cortex, and some estrogenic principles) discussed later, the products administered *by mouth* have little effect even if they do contain some active principle or principles.[1] The active substances are either destroyed by the digestive juices or if not broken down they may not be absorbed from the intestine. An excellent example is the one presented by Evans [2] who, with Long, administered fresh pituitary glands to rats as the sole source of food without the slightest detectable acceleration of growth; a much smaller amount of material properly extracted and administered parenterally is known greatly to enhance the rate of growth. Thus, glandular therapy by the oral route is in general quite limited; even when effective it is usually wasteful, as much more material must be used owing to poor absorption. However, when dealing with relatively impure products that may have toxic effects on parenteral injection it may be preferable to administer the preparation orally, if feasible. An example of this is adrenal cortex extract.[3]

Purification, particularly important for preparations intended for parenteral use, involves many difficulties. Chemical treatment may result in degradation products; whether or not a principle obtained by extraction actually exists as such in the gland from which it is derived is often a matter for speculation. Only a few substances have so far been obtained in crystalline form; by far the great majority of the remaining products are more or less contaminated with other active or inactive substances. Effects ascribed to an alleged active principle may be caused by pharmacologically active contaminants. These contaminants may also be important from the standpoint of toxicology; a number

1. The Council on Pharmacy and Chemistry has omitted from N. N. R. all desiccated ovarian preparations, at one time thought to be active by mouth (Desiccated Ovarian Preparations for Oral Administration Omitted from N. N. R., Report of the Council on Pharmacy and Chemistry, J. A. M. A. **94**: 1997 [June 21] 1930). With the exception of thyroid and some liver and stomach preparations, no glandular product for oral use stands accepted by the Council.

2. Evans, H. M.: The Growth Hormone of the Anterior Pituitary, J. A. M. A. **104**: 1232 (April 6) 1935.

3. (a) Rogoff, J. M., and Stewart, G. N.: Suprarenal Cortical Extracts in Suprarenal Cortical Insufficiency (Addison's Disease), J. A. M. A. **92**: 1569 (May 11) 1929. (b) Loeb, R. F.: The Adrenal Cortex, ibid. **104**: 2177 (June 15) 1935.

of untoward reactions from the administration of glandular products have been reported.[4]

Assay involves still further difficulties. The majority of methods employed are biologic; the effect of a given preparation is determined on some physiologic function in a test animal. At best biologic assay entails very large errors, sometimes as much as 1,000 per cent.[5] In addition, the effect produced in the test animal that serves as the measure of potency may not necessarily be the effect desired or the effect that occurs in the human being who is treated with the preparation in question. For instance, a comparison of two estrogenic substances by the Allen-Doisy vaginal cornification test has no necessary bearing on the relative effectiveness of the two preparations in relieving the symptoms of the menopause in a woman; or an effect occurring in a test animal, such as the rise in blood pressure following the administration of a posterior pituitary extract to an anesthetized dog or cat, may not occur at all in the normal human being.[6] Species differences also play a large part in making more difficult the interpretation of assay data. This is particularly true with gonadotropic and estrogenic products. Recent studies have emphasized the great differences in the physiology of the reproductive tracts in various species of animals. The only animal available for experimentation having a menstrual cycle similar to that of the human being is the Macacus monkey. Yet this animal is not used for assay. Most, if not all, the products belonging to this class are assayed on mice, rats or rabbits. Thus, the stated activity of a great many glandular products may be considered as no more than rough approximations. In addition, questions of deterioration in the interim between assay and use and of differences in rates of absorption and excretion of the active principle or principles make endocrine therapy with commercial products even more uncertain. Even when active products are used, consideration of the possible production of antihormones, which have been discussed at length by several authors in this series,[7] enjoins caution in glandular therapy. From the practical standpoint of clinical use, the important factor is that the phenomenon described by Collip and his co-workers actually does occur with certain glandular products. Questions of the nature and mechanism of production of antihormones are secondary; for the time being these need concern only the physiologists.

Much confusion arises from the present deplorable state of endocrinologic nomenclature; this is particularly true with respect to commercial products. As stated in a recent editorial in THE JOURNAL,[8] "In addition to the many terms invented from time to time by research workers in many parts of the world, the situation has been made even more difficult by the tendency of each of a number of commercial firms to register its own trade mark for a product to which otherwise, in most cases, it has no proprietary claim. The language of medicine appears to have been more burdened than enriched by the new nomenclature." Not infrequently the physician is confronted with a series of products purporting to be similar but sold under widely different names, or with other products unquestionably different but marketed under similar names. Examples of the former are too numerous to require specific citation; as an instance of the latter, three preparations of Parke, Davis & Co. may be mentioned: "antuitrin," apparently a "soup-like" extract of the anterior pituitary; "antuitrin-S," an extract of the urine of pregnant women containing the pituitary-like gonadotropic factor; and "antuitrin-G," an extract of the anterior pituitary said to contain the growth hormone. That these three preparations are sometimes confused one with another is not surprising. Another example is supplied by the Schering Corporation, which markets two different estrogenic preparations, "progynon" and "progynon-B."

With an understanding of the many serious difficulties involved in the use of commercial glandular products, detailed consideration may now be given to the products themselves. It is inevitable that many products marketed in various parts of the world will be omitted; it is practically impossible to consider in detail all the products on the market within a reasonable space. Many of the preparations are such as to require no serious consideration; they fall into various classes of useless pharmaceuticals the characteristics of which are evident. Among these are combinations of extracts or of desiccated material from two or more glands. With one or two exceptions (such as combinations of liver and stomach for the treatment of pernicious anemia) these appear at present to be irrational. The great majority of pluriglandular products on the market are simply unstandardized (from the standpoint of their content of active principles) empirical mixtures; many are intended for administration by mouth, by which route the alleged active principles would in most cases not be effective. In addition, mixtures that do contain active material, and are recommended for administration by a route by which they may be expected to be effective, will contain the active substances in approximately fixed (and after a little aging, in unknown) proportions. Also, the effects of chemical interaction of different principles in solution are practically unknown. It seems much more rational to employ two or more separate extracts (each standardized as to its content of active substance) if these should be indicated. It is sufficiently confusing at best that a considerable number of the available extracts of single glands contain more than one active principle; to add to the relatively impure preparations now available the products of still other glands is to compound the confusion.

The fact that the description of a product does not appear in the following should not be construed as necessarily indicating that it is considered to be a useless preparation. Furthermore, the amount of space devoted to describing the various preparations may not

4. (*a*) Benham, H. W.; Fisher, Mary; More, L., and Thungar, C. J. L.: Three Cases of Addison's Disease Treated with an Extract of Suprarenal Cortex, Lancet **1**: 125 (Jan. 16) 1932. (*b*) Rowntree, L. G., and Ball, R. G.: Diseases of the Suprarenal Glands, Endocrinology **17**: 263 (May-June) 1933. (*c*) Rogoff, J. M.: The Adrenal Cortical Hormone: Experiments with a Commercial Adrenal Extract (Eschatin), J. A. M. A. **103**: 1764 (Dec. 8) 1934. (*d*) Simon, F. A.: Hypersensitiveness to Pituitary Extract, ibid. **104**: 996 (March 23) 1935. (*e*) Werner, A. A.: Experiments to Produce Lactation in Castrate Women, Endocrinology **19**: 144 (March-April) 1935. (*f*) West, Randolph: Antianemic Material of Liver and Stomach, ibid. **105**: 432 (Aug.) 1935.

5. Estrogenic Substances: Theelin, Report of the Council on Pharmacy and Chemistry, J. A. M. A. **100**: 1331 (April 29) 1933.

6. Geiling, E. M. K.: The Posterior Hypophysis, J. A. M. A. **104**: 738 (March 2) 1935.

7. Evans, H. M.: Clinical Manifestations of Dysfunction of the Anterior Pituitary, J. A. M. A. **104**: 464 (Feb. 9) 1935. Smith, P. E.: General Physiology of the Anterior Hypophysis, ibid. **104**: 548 (Feb. 16) 1935. Collip, J. B.: Diabetogenic, Thyrotropic, Adrenotropic and Parathyrotropic Factors of the Pituitary, ibid. **104**: 827 (March 9), 916 (March 16) 1935. Novak, Emil: The Therapeutic Use of Estrogenic Substances, ibid. **104**: 1815 (May 18) 1935.

8. The Nomenclature of Glandular Products, editorial, J. A. M. A. **103**: 1152 (Oct. 13) 1934.

be in proportion to their relative importance. A number of new and comparatively untried products are discussed at length, as descriptive information on them may not easily be available elsewhere. Well known substances described in the Pharmacopeia or in New and Nonofficial Remedies are mentioned briefly or not at all.

Emphasis will be confined chiefly to the more important products marketed in the United States. Only those designated with the suffix N. N. R. are accepted by the Council on Pharmacy and Chemistry.

ANTERIOR PITUITARY

Pituitary preparations intended for oral use will not be discussed, as there is no satisfactory evidence that these are effective by mouth.

Growth Hormone.—Commercial preparations containing the anterior pituitary growth hormone in solution, free from other active principles, are not yet available. In general this appears to be true of all the pituitary extracts; even the relatively pure products contain contaminating substances in greater or less amount. The physiologic action and the therapeutic indications and effects of preparations containing the growth hormone are considered in the papers by Evans [2] and by Novak [9] in this series. The clinical use of these products is still in the experimental stage. Caution is therefore indicated.

The presence of active principles other than the growth-promoting factor must be kept in mind, as untoward effects may occur owing to stimulation of the thyroid, gonads [10] or other organs. Three products claimed to contain the growth hormone are available on the American market:

Anterior Pituitary Extract Squibb, E. R. Squibb & Sons: This is said to contain the growth-promoting factor and, in addition, the gonadotropic and thyrotropic principles of the hypophysis. It is assayed for its content of growth hormone only. Adult female rats weighing 250 ± 25 Gm. are injected daily for ten successive days; one rat unit is the daily dose necessary to cause an increase in body weight of 10 per cent in an eleven day period. Anterior pituitary extract Squibb is marketed in 10 cc. rubber-diaphragm-capped vials containing 10 rat units in each cubic centimeter. As the potency in terms of growth hormone appears to be approximately equal to that of antuitrin-G, the same dosage statement would probably apply. The dosage recommended by the manufacturer is from 0.5 to 5 cc. intramuscularly three times a week.

Antuitrin-G, Parke, Davis & Co.: This preparation is stated to contain the growth hormone without significant amounts of the gonadotropic, thyrotropic or adrenotropic factors. It is doubtful whether antuitrin-G may for practical purposes be considered free of these factors however, as no assay data are available as to the content of these principles. The product is assayed for its content of growth hormone by its effect on the growth of adult female rats from 6 to 7 months of age; one rat unit is the minimal daily amount which when injected intraperitoneally in two divided doses will cause an average daily increase of 1 per cent in body weight over a period of ten days. Antuitrin-G is marketed in 20 cc. rubber-diaphragm-capped vials; each cubic centimeter contains 10 rat units. The optimum dosage is not definitely established; antuitrin-G has been administered, preferably intramuscularly, in doses varying from 1 to 3 cc. two or three times a week. The dosage recommended by the manufacturer is from 6 to 10 cc. per week in divided doses of 2 to 5 cc.

9. Novak, Emil: Anterior Pituitary and Anterior Pituitary-like Substances: Therapeutic Applications, J. A. M. A. **104:** 998 (March 23) 1935.

10. Evans,[2] Novak.[9]

Phyone, Wilson Laboratories: Information is not available as to the method of preparation and standardization of this product, or as to the forms in which it is marketed.[10a]

Gonadotropic Principles.—These are of two types, known, for want of better terms, as follicle stimulating and luteinizing. Commercial preparations in general contain mixtures of the two (and probably greater or smaller amounts of other factors as well). As yet there are few controlled clinical studies with the gonad-stimulating extracts of the pituitary itself; most of those so far reported have been made with extracts of pregnancy urine or placenta. The effects of the latter, as already pointed out in several articles of this series,[11] are not equivalent to those produced by products obtained from the pituitary. In view of studies indicating that a persistent refractory state [12] of the ovaries of experimental animals may be produced by pituitary extracts, the commercial preparations should be employed clinically only when their known physiologic effects are fully understood and then with caution. The indications, contraindications and dosage are at present poorly defined.

Preparations derived from pituitary tissue:

Gynantrin, G. D. Searle & Co.: This is said to contain the two gonadotropic factors of the pituitary; the presence and amount of other factors are not stated. Gynantrin is said to be assayed and standardized as follows: A rat unit is defined as the smallest amount which when divided into six equal parts injected over a period of three days into immature female rats less than 30 days old and weighing from 35 to 40 Gm. will by the fifth day produce follicular maturation and luteinization of the ovaries and a marked increase in the size of ovaries and uterus in at least 60 per cent of animals so treated. Gynantrin is marketed in 5 and 15 cc. rubber-diaphragm-capped vials, each cubic centimeter containing 100 rat units. The dosage recommended by the manufacturer is from 0.1 to 2 cc., administered preferably intramuscularly. As already stated, the indications, contraindications and dosage of this preparation are not yet well defined.

Prephysin-Chappel, Chappel Bros., Inc.: This is said to contain the follicle-stimulating principle of the pituitary gland, including small quantities of the luteinizing factor, prepared by the method of Fevold and his collaborators as modified by Meyer and Fevold. The presence and amount of other factors are not stated. Prephysin is said to be standardized as follows: One rat unit is that amount which, divided into six equal parts and injected over a period of three days into immature female rats 22 days old, produces an increase in the weight of the ovaries of from 50 to 100 per cent by the end of the fifth day. The product is marketed in 5 cc. rubber-diaphragm-capped vials, each cubic centimeter containing 25 rat units. The dosage recommended by the manufacturer is from 0.5 to 1 cc. Caution is necessary with regard to overdosage.

A number of products purporting to contain the gonadotropic factors of the pituitary are made by European firms. The available descriptions of these products are meager and in some cases it is not clear whether a given preparation in question is derived from the pituitary, the placenta or the urine of pregnancy. Infor-

10 a. According to Evans,[2] "phyone" prepared by the method of Van Dyke and Wallen-Lawrence is "contaminated not only with much inert protein but also with recognizable amounts of gonadotropic and thyrotropic hormones and traces of the lactogenic substance." Available literature does not indicate to what extent this applies to the Wilson product.

11. Evans,[2] Smith, P. E.: The Hypophyseal Gonadotropic Hormones, J. A. M. A. **104:** 553 (Feb. 16) 1935. Collip, J. B.: Interrelationships Among Urinary, Pituitary and Placental Gonadotropic Factors, ibid., p. 556.

12. Hertz, Roy, and Hisaw, F. L.: Effects of Follicle-Stimulating and Luteinizing Pituitary Extracts on the Ovaries of the Infantile and Juvenile Rabbit, Am. J. Physiol. **108:** 1 (April) 1934.

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mation as to the methods of standardization is in practically all cases insufficient. Hence these will not be considered in detail.[13]

Commercial preparations containing the lactogenic,[14] blood sugar-raising[15] or other principles of the pituitary more or less free of contaminating factors are not yet available. Investigations have not yet reached the stage at which the administration of such products to patients would be warranted, even if they were available.

A number of firms market "soup-like" extracts of the anterior pituitary. An example of these is antuitrin (without the qualifying S or G); most firms do not employ trade names for these products. The number, nature and potency of the active principles (if any) in such preparations is in general not known. The available evidence indicates that these are usually not assayed but are adjusted to represent a certain weight of fresh or dried gland. Clinical use of products of this type rests on an empirical basis only; their employment should be deprecated.

ANTERIOR PITUITARY-LIKE PREPARATIONS

Extracts from the urine of pregnancy or placenta are available on the market under various names. The relation of such products to those derived from the pituitary itself has already been discussed in this series.

Antophysin, Winthrop Chemical Company: This preparation unfortunately is marketed in such a way as to create the impression that it is derived from the pituitary. However, it is described in recent advertising circulars issued by the firm as "anterior pituitary-like gonadotropic hormone." It is therefore obvious that this product is obtained either from the urine of pregnancy, the placenta or both. The source, however, as well as the method of standardization is not stated. Antophysin is marketed in ampules containing a soluble powder, 100 or 500 rat units, together with ampules of distilled water for dissolving the powder before injection. Intramuscular injection is employed. The product is also marketed in tablets for oral administration, but there is no satisfactory evidence that such tablets would be active by mouth in human beings.

Antuitrin-S, Parke, Davis & Co.: This product is extracted from the urine of pregnancy. It is stated to be standardized as follows: One rat unit is the minimal amount which, when divided into six doses injected subcutaneously over a period of three days, will produce corpora lutea in the ovaries of 26 day old rats by the end of ninety-six to 100 hours. Antuitrin-S is marketed in rubber-diaphragm-capped vials containing 10 cc.; each cubic centimeter contains 100 rat units.

A. P. L., Ayerst, McKenna and Harrison: This preparation contains gonadotropic substance derived from the placenta by the method of Collip. It is standardized as follows: One "biological day-unit" is the minimal amount which when administered subcutaneously daily for three days to immature rats (from 18 to 21 days old and weighing from 20 to 30 Gm.) will produce a vaginal estrous reaction within 120 hours after the first injection in 50 per cent of the animals. A. P. L. is marketed in 5 cc. rubber-diaphragm-capped vials; each cubic centimeter contains 100 "biological day-units."

Follutein, E. R. Squibb & Sons: Follutein contains the gonadotropic factor extracted from the urine of pregnancy. It is standardized as follows: One rat unit is the minimum amount which, given to immature rats 30 days old, in six injections on three consecutive days, produces mature follicles, hemorrhagic follicles and corpora lutea in the ovaries within 100 hours after the first injection. The product is marketed in a syringe containing 1 cc. of a glycerin solution (1,250 rat units), together with a rubber-diaphragm-capped vial containing 9 cc. of distilled water. Before use the contents of the syringe are injected into the vial; the mixture (which, according to the firm, should be kept refrigerated and used within three weeks) contains 125 rat units in each cubic centimeter.

POSTERIOR PITUITARY

The extract of the posterior lobe of the pituitary most commonly employed is that described in the U. S. Pharmacopeia. Hence this need not be discussed here. Some firms market extracts of twice the potency of the U. S. P. product; none of these more potent preparations stand accepted by the Council on Pharmacy and Chemistry for New and Nonofficial Remedies.[16] There seems to be little excuse for marketing the more active extracts, as the preparations of U. S. P. potency are sufficiently effective and the former may be dangerous if employed inadvertently for obstetric use.

Two preparations described in New and Nonofficial Remedies may be mentioned briefly:

Pitocin, N. N. R., Parke, Davis & Co.: An extract of the posterior lobe of the pituitary having an oxytocic effect (10 units in each cubic centimeter) equal to that of U. S. P. solution of pituitary, but less than 0.5 unit per cubic centimeter of pressor activity.

Pitressin, N. N. R., Parke, Davis & Co.: An extract of the posterior lobe of the pituitary containing the pressor and diuretic-antidiuretic principle or principles in the same concentration (10 units in each cubic centimeter) as that in U. S. P. solution of pituitary but with less than 0.5 unit per cubic centimeter of oxytocic activity.[17]

ESTROGENIC PREPARATIONS

Much confusion exists not only as to the nature, sources, potency and effects of the estrus-producing products but also as to their clinical indications. It should be emphasized that none of the known potent preparations are derived from ovary and that there is no satisfactory evidence to indicate that any of the preparations actually contain the ovarian follicular hormone or hormones. Consequently it is not warranted to speak of estrus-inducing principles obtained from the urine of pregnancy, placenta or amniotic fluid or by chemical alteration of any of these factors as "ovarian follicular hormone." Nor is the commonly used "(o)estrin" a satisfactory generic term for all these products. Estrin has been identified both with the specific crystalline compound known as theelol[18] and with the chemical nucleus of compounds of this group; thus theelin is known as "ketohydroxyestrin" and theelol as "trihydroxyestrin." Estrin cannot be both the compound itself and the chemical nucleus of the substance, much as caffeine cannot be both xanthine

13. Descriptions of these products given in Gehe's Codex, for instance, are not adequate to serve as a basis for the intelligent use of any of these products. If such preparations are employed, definite information should be obtained from the manufacturer in each case as to source, method of standardization, and presence of active principles other than the one assayed for standardization. As the use of all these products is in an experimental stage, it seems best to employ the products of firms in this country in order that information may more readily be obtained.

14. While E. R. Squibb & Sons announced some time ago that it would shortly market a lactogenic extract of the pituitary, no subsequent announcement appears to have been made by the firm. It appears from the recent report by Werner[c] that the efforts of this firm to produce an active and relatively pure preparation of prolactin have not yet succeeded. Werner was unable to induce lactation in women with the Squibb extract; severe local and systemic reactions occurred.

15. Praephyson, Promonta (Hamburg, Germany), has been claimed to contain the blood sugar-raising principle of the anterior pituitary. However, if it does, other factors are unquestionably present as well.

16. Report of the Council on Pharmacy and Chemistry (omission from N. N. R. of all posterior pituitary extracts differing from pharmacopeial potency), J. A. M. A. **93**: 524 (Aug. 17) 1929.

17. It will be noted that the strength of pitressin as described here is one-half that stated in N. N. R. 1935; the potency has recently been changed to make it accord with that of U. S. P. solution of pituitary with respect to the amount of pressor principle.

18. Doisy, E. A.: Chapter X (page 494) of Sex and Internal Secretions (Edgar Allen, editor), Baltimore, Williams & Wilkins Company, 1932.

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and trimethylxanthine. The chemical nomenclature proposed for the estrogenic and related substances by a British group of investigators[19] has a number of features to commend it. None of the proposed chemical names, of course, are applicable to estrogenic principles the chemical nature of which is unknown. For the time being, therefore, it is best to refer to these simply as "estrogenic substances."

The question of the relative potency of the estrogenic products is in an unsatisfactory state, owing to inherent variability of test animals, to differences in

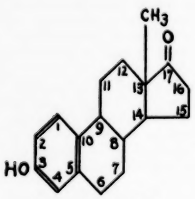

Fig. 1.—Theelin.

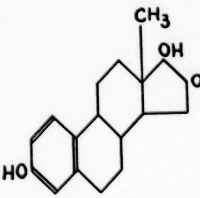

Fig. 2.—Theelol.

species sensitivity, to lack of uniformity in technic of conducting the assays and to the use of three different units, mouse, rat and international unit. Fortunately the latter is superseding the two former, although confusion continues to exist because various manufacturers employ different ratios for the equivalence of rat, mouse and international units and because they do not state which animal is used for assay against the international standard.[20] The international unit is defined by the Permanent Commission on Biological Standardisation of the Health Organisation of the League of Nations[21] as the estrus-producing activity contained in 0.1 microgram (one ten-millionth of a gram) of a standard preparation of theelin, this being approximately one-third the original rat unit of activity as defined by Allen and Doisy. A discussion of the various technics of assay appears in the report of the Council on Pharmacy and Chemistry.[5]

The commercial products that represent crystalline material belong to three types, with proposed formulas (based on the formula for sterols suggested by Rosenheim and King) as follows:[22]

(1) 3-hydroxy 17-keto 1, 3, 5-estratriene;[19] ketohydroxyestrin; theelin; estrone, the compound used as the international standard (fig. 1).

Examples: Theelin, Parke, Davis & Co.; oestroform,[23] British Drug Houses; folliculin menformon, Organon Laboratories (though apparently the latter product is not reduced to crystalline form during manufacture it is said to contain theelin as its active principle).

(2) 3, 16, 17-trihydroxy 1, 3, 5-estratriene;[19] trihydroxyestrin; theelol; estriol (fig. 2).

Example: Theelol, Parke, Davis & Co. Another product, emmenin, Ayerst, McKenna and Harrison, probably belongs in this group; while it is not reduced to a crystalline state during manufacture, it is said to represent a complex of theelol.[24]

(3) The benzoate of 3, 17-dihydroxy 1, 3, 5-estratriene;[19] the benzoate of estradiol (the hydroxyl group in the 3 position is replaced by benzoate forming 3-benzoate 17-hydroxy 1, 3, 5-estratriene[24a]); hydroxyestrin benzoate (fig. 3).

Examples: Progynon-B, Schering Corporation; dimenformon,[23] Organon Laboratories.

The three compounds differ considerably in a number of respects in their effects on test animals. To what extent these differences are reflected in the clinical use of these substances is unknown. It should be remembered that the commercial preparations are assayed according to the vaginal cornification test of Allen and Doisy in mice or rats. It does not follow that two preparations equally effective in producing vaginal cornification in animals will be equally effective in relieving some of the castration phenomena, for instance, in women; only in the treatment of gonorrheal vaginitis in children is cornification of the vaginal mucous membrane the desired clinical result.

Questions of the use of oily in preference to aqueous solutions, and of absorption, distribution and excretion of estrogenic principles are considered elsewhere[25] in this series and need not be discussed here.

Amniotin, E. R. Squibb & Sons: This is an estrogenic preparation originally derived from amniotic fluid; it is not reduced to the crystalline state during manufacture. More recently, according to the firm, the urine of pregnant mares has served as an added source of active material.

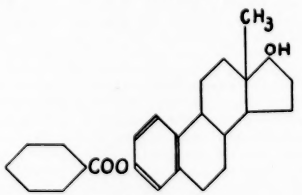

Fig. 3.—Progynon-B.

Dosage forms: Amniotin in Oil. Marketed in 1 cc. glass ampules containing amniotin in corn oil in potencies of either 2,000 or 8,000 international units in each cubic centimeter, for intramuscular administration.

Amniotin Pessaries. These are vaginal suppositories containing amniotin in a glycerin and gelatin base to which is added 0.5 per cent of phenol as a preservative. Each suppository contains 2,000 international units. Fair absorption of the active

19. Adam, N. K.; Danielli, J. F.; Dodds, E. C.; Marrian, G. F.; Parkes, A. S., and Rosenheim, O.: Nomenclature of the Oestrin Group, Nature **132:** 205 (Aug. 5) 1933.

20. The ratios of international to rat unit employed by American firms are: 1: 3.33 (Parke, Davis); 1: 5 (Schering); 1: 8 (Squibb). It is apparent that the rat units formerly employed by these firms were not equivalent. It is probable that the potencies as stated by the different firms in international units are more nearly comparable. However, E. Laqueur (Zur Eichung brunstgebender Stoffe, Klin. Wchnschr. **14:** 339 [March 9] 1935) has pointed out that a comparison of two different estrogenic products on the basis of their claimed potency in international units is of little value unless the animal in which the comparison is made is stated. Rats, for instance, are much more sensitive to progynon-B than to theelin (the international standard), while mice are equally sensitive to both. The comparative sensitiveness of the human being to the different products is unknown.

21. Conference on the Standardisation of Sex Hormones, London, July 30 and Aug. 1, 1932, League of Nations, Quarterly Bulletin of the Health Organisation, Special Number on Biological Standardisation, January 1935.

22. The literature is reviewed by Sabotka, Harry: Chemistry of the Bile Acids and Related Substances, Chem. Rev. **15:** 311 (Dec.) 1934.

23. Oestroform and dimenformon apparently are not marketed in the United States.

24. Collip, J. B.; Browne, J. S. L., and Thomson, D. L.: The Chemical Nature of Emmenin, Endocrinology **18:** 71 (Jan.-Feb.) 1934.

24a. As the benzoate radical replaces one of the hydroxyl groups (which are directly involved in producing the estrogenic effect of this class of compounds) hydroxyestrin benzoate should not be considered simply a salt of the dihydroxy compound; it is a different estrogenic substance.

25. Allen, Edgar: The Physiology of Estrogenic Principles, J. A. M. A. **104:** 1498 (April 27) 1935. A more extensive discussion of these specific questions will be found in the Council report on Estrogenic Substances.[5]

agent may apparently be obtained by the vaginal route, though this is of course less certain than by intramuscular administration.

Amniotin Capsules. Soluble gelatin capsules containing amniotin in corn oil; each capsule represents 1,000 international units; for oral administration.

Emmenin, Ayerst, McKenna and Harrison: This is an extract of placenta made by the method of Collip, apparently containing as its chief active principle a complex of theelol [24] not reduced to a crystalline state. Small quantities of other active substances such as theelin and theelol are probably also present. Emmenin is standardized as follows: One "day-oral unit" is the minimum amount administered daily in the drinking water which will produce a vaginal estrous reaction within 100 hours in 50 per cent of a group of rats from 18 to 21 days of age and weighing between 20 and 30 Gm. This preparation is marketed in the form of Emmenin Liquid for oral administration, each cubic centimeter containing 5 day-oral units (no data are available as to the relationship of this unit to the international unit). The recommended dosage varies from 4 to 30 cc. per day. This product has been less extensively employed than some of the others.

Folliculin Menformon, Organon Laboratories, Amsterdam; Degewop, Berlin; H. H. Beisner, New York: This product is said to contain theelin (estrone) as its active principle, though apparently it is not reduced to crystalline form during manufacture. The source is the urine of pregnancy. Dosage forms: Aqueous solution in 5 cc. rubber-diaphragm-capped vials containing 1,000 international units in each cubic centimeter.

Oily solution (type of oil not specified) in 5 cc. ampules containing 10,000, 50,000 or 100,000 international units in each cubic centimeter.

Tablets for oral administration containing 100 or 1,000 international units each.

Progynon,[26] Schering Corporation: This preparation is prepared from placenta and/or the urine of pregnancy. It is not purified in the process of manufacture; hence the exact nature of the active principle or principles is not known.

Dosage forms: Ampules of 1 cc. aqueous solution containing 125 international units.

Tablets containing either 225, 1,000 or 3,000 international units.

Progynon-B, Schering Corporation: This is crystalline hydroxyestrin benzoate obtained by hydrogenation of theelin and subsequent conversion to the benzoate. The claim made by the Schering Corporation that progynon-B is the "real female sex hormone" is quite unfounded.[26a] This claim is based on the recent report by MacCorquodale, Thayer and Doisy [27] of the isolation of a crystalline estrogenic compound from the liquor folliculi of hog ovaries. This compound was found to have a melting point within 1 degree C. of and a biologic activity approximately equal to that of 3,17-dihydroxy 1, 3, 5-estratriene (not the benzoate). This does not constitute identification from the chemical standpoint; certainly there is no evidence that the compound obtained by MacCorquodale and his associates is the benzoate, nor is there evidence that the benzoate occurs naturally. In addition, the newly isolated substance was obtained from hog ovaries; not only may there be other active substances in hog liquor folliculi but there is no available evidence whatever as to the nature of the estrogenic principle or principles in human ovaries. The claim of the Schering Corporation that progynon-B is "produced synthetically" may be misleading; the chemical processes whereby naturally occurring theelin is reduced and the benzoate formed does not constitute "synthesis" as this term is commonly understood. The wording of the firm's recent advertising which implies that progynon-B is "six times as active" as the substance from which it is derived may also be misleading. While the claimed greater activity may be true under certain conditions with the dihydroxy form itself,[28] the benzoate (progynon-B) is said to be less active than the dihydroxy form.[29] Regardless of the relative potency in test animals, no information is available as to the comparative activity in human beings.[30]

Progynon-B is marketed in ampules containing 1 cc. of a sesame oil solution of hydroxyestrin benzoate of either 2,500, 10,000 or 50,000 international units.

Theelin, Parke, Davis & Co.: This is the crystalline ketohydroxyestrin first isolated by Doisy and his associates. It is obtained from the urine of pregnancy. It is marketed in ampules containing 1 cc. of either the aqueous solution (167 international units) or the oily solution (type of oil not specified) (1,000 international units).

Theelol, Parke, Davis & Co.: This is crystalline trihydroxyestrin, obtained from the urine of pregnancy. It is marketed in capsules for oral administration, each containing 50 Doisy rat units (according to the ratio employed by the firm, which is identical to that suggested by the Committee of the League of Nations, this would represent 167 international units).

A number of other preparations purporting to contain active estrogenic material are marketed in this country; however, insufficient information is available regarding these products to estimate their probable usefulness. Hence they will not be discussed here.[30] A large variety of estrogenic products are marketed in other countries.[31] Commercial preparations made from the ovary [32] generally contain little if any estrogenic material. Desiccated ovarian preparations were omitted from New and Nonofficial Remedies by the Council on Pharmacy and Chemistry in 1930.[1]

CORPUS LUTEUM

The physiology of the corpus luteum has been discussed at length in the article in this series by Corner.[33] Since this article was written, the structure of the progestational hormone of the corpus luteum (designated "progestin" by Allen and Corner) has been elucidated.[34] The proposed formula, which illustrates the close relationship to the estrogenic compounds discussed in the previous section, is given in figure 4 (Allen, Butenandt, Corner and Slotta have adopted the name "progesterone" for the crystalline principle).

Comparatively little clinical application of active corpus luteum preparations has yet been made,[35] owing

26. Progynon should not be confused with progynon-B. It is unfortunate that in this case, as in others, firms do not follow the Council's rule which forbids the use of letters or numbers as an integral part of a name. The confusion entailed by the use of letters is well illustrated in this instance.

26a. Progynon-B and the Ovarian Follicular Hormone, Report of the Council on Pharmacy and Chemistry, J. A. M. A., this issue, p. 676.

27. MacCorquodale, D. W.; Thayer, S. A., and Doisy, E. A.: The Ovarian Follicular Hormone, Proc. Soc. Biol. Chem., April 10-13, 1935, p. lviii; The Crystalline Ovarian Follicular Hormone, Proc. Soc. Exper. Biol. & Med. **32**: 1182 (April) 1935.

28. Reports in the literature with respect to the relative estrogenic activity of dihydroxyestrin (estradiol) and ketohydroxyestrin (theelin, estrone) vary within a wide range. Thus the dihydroxyl compound has been claimed to be from two to eight times as potent as theelin, depending on the species of animal used and the method of assay. Laqueur[29] found that hydroxyestrin benzoate (progynon-B) was about five times as potent as theelin in rats but that the two compounds were about equally effective in mice.

29. The benzoate, although it is less active, is employed because of its greater solubility.

30. This group includes such products as estrogenic hormone (Reed and Carnrick), plestrin (Harrower), sistomensin (Ciba) and thelestrin (G. W. Carnrick).

31. Among European preparations said to contain estrogenic substance are dimenformon and folliculin menformon (both mentioned in the text), folipex (Sanabo-Chinoin), fontanon-feminin (Sachsiches Serum-Werk), glandubolin (Richter), gynoestryl (Laboratoire Française de Chimotherapie), hormofollin (Labopharma), oestroform (mentioned in the text) and perlatan (Boehringer). This is not a complete list.

32. A number of these products are marketed with extravagant claims under fanciful names which serve in a measure to conceal their real identity.

33. Corner, G. W.: Corpus Luteum Therapy, J. A. M. A. **104**: 1899 (May 25) 1935.

34. Allen, W. M.: The Isolation of Crystalline Progestin, Science **82**: 89 (Aug. 2) 1935. The references to the various publications may be found in Sabotka.[22]

35. Bishop, P. M. F.; Cook, Frank, and Hampson, A. C.: Indications for the Clinical Use of Progestin, Lancet **1**: 139 (Jan. 19) 1935. Krohn, Leon; Falls, F. H., and Lackner, J. E.: On the Use of the Lutein Hormone, Progestin, in Threatened and Habitual Abortion, Am. J. Obst. & Gynec. **29**: 198 (Feb.) 1935.

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no doubt to the fact that until very recently satisfactory commercial products were not available.[36]

Proluton, Schering Corporation: The method of preparation and assay of this product is not stated by the firm. The product is marketed in ampules (size unstated) containing 1/25 or 1/5 "European rabbit unit." This unit the firm claims to be "about 3 times stronger" than the American unit. If this unit represents the Clauberg unit, which seems probable, it appears according to Corner,[53] to be somewhat less than the rabbit unit as defined by Allen and Corner, and not three times greater as indicated by the firm.

Another preparation, corlutin, Reed and Carnrick, is said to be available, but descriptive information on this product is lacking.

There is no evidence that any of the many products of corpus luteum intended for oral administration are of any therapeutic value. Solutions in ampules intended for parenteral injection, unless they are assayed for their content of progestin, are probably equally valueless.

TESTIS HORMONE

No active preparation of the testis hormone or hormones appears to be available on the American market. Some products are manufactured by European firms; however, little adequate information is available as to

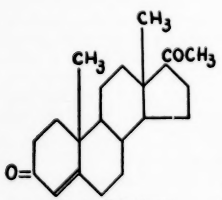

Fig. 4.—Progesterone.

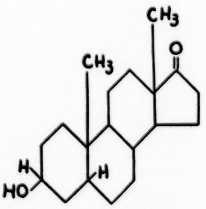

Fig. 5.—Androsterone.

the activity of these products or as to their therapeutic applications. The formula of a compound isolated from urine by Butenandt and designated "androsterone," is given in figure 5.[22] Recent evidence indicates that this is not identical with the principle in extracts of the testis itself.

Among the European preparations purporting to contain testis hormone are androl, Henning (1 cc. = 3 bird units); androfort, Richter (1 cc. = 2 bird units); hombreol, Organon Laboratories (1 cc. = 4 or 20 bird units).[37]

Preparations intended for oral administration as well as injectible solutions not assayed for their content of active principle are probably completely useless.

The theory proposed by McCullagh and his associates [38] that a principle exists in the testis (which they designate by the unfortunate term "inhibin") that may cause diminution in size of the hypertrophied prostate through depression of the pituitary is not based on adequate evidence. No adequately controlled studies appear to have been made on this hypothetical principle nor in fact has its existence been demonstrated.

36. Among European corpus luteum preparations said to contain progestin are glanducorpin (Richter), luteogan (Henning), luteolipex (Sanabo-Chinoin), lutex (Leo), lutren (Bayer), progestin (British Drug Houses), progestin (Degewop) and progestin (Organon Laboratories). This list is probably not complete.

37. Hombreol (and probably the others also) is made from urine and not from testicular tissue.

38. McCullagh, D. R.: Dual Endocrine Activity of Testes, Science **76:** 19 (July 1) 1932. Lower, W. E.; McCullagh, D. R., and Walsh, E. L.: Further Report on the Hormonic Control of Prostatic Function, Tr. Am. A. Genito-Urin. Surgeons **27:** 15 1934.

THYROID

Thyroid requires little discussion here, as the most commonly used product, desiccated thyroid, is described in the U. S. Pharmacopeia. Deviations from pharmacopeial potency of some of the commercial products are discussed in the article by Means.[39] Reference is made also to the comprehensive article by Thompson and his associates,[40] in which the comparative effects of thyroxine and related compounds are considered at length.

PARATHYROID

Three commercial preparations containing the active principle of the parathyroid glands [40a] are available, made according to the method of Hanson (for methods of preparation and assay see New and Nonofficial Remedies, 1935): Parathyroid Extract-Lilly, N. N. R., parathyroid Extract-Squibb, N. N. R., and Paroidin, N. N. R.-Parke, Davis & Co. All are marketed in 5 cc. rubber-diaphragm-capped vials containing 100 units in each cubic centimeter.

ADRENAL

Adrenal Medulla.—The active agent of the adrenal medulla, epinephrine, is included in the U. S. Pharmacopeia. Commercial preparations of this substance are so well known as to require no description here (see New and Nonofficial Remedies, 1935).

Adrenal Cortex.—Much confusion exists in this field with regard to nomenclature, methods of preparation of active extracts, methods of assay, the number of active principles in the gland, the potency of commercial products and the therapeutic indications for these products.

One of the commonly used names for extracts of the adrenal cortex is "cortin"; this is the term originally applied by Hartman [41] to a product made by salt precipitation; preparations made by this method were later shown to be practically or entirely inactive.[42] The name was subsequently applied by Hartman to a product made by a different method employing lipoid solvents; this process was the subject of a patent ("Cortin and Method of Preparing Same").[43] Thus the term is employed to represent two different products; if "cortin" is employed at all it should be restricted to extracts made by these methods specifically. The name is objectionable, however, from several standpoints: It is derived from "cortex" and hence may represent the cortex of any organ, such as kidney or cerebrum (this applies to "eschatin" also, as this is derived from the Greek for cortex). "Adrenocortin" is a more satisfactory term, but this is already preempted by a commercial firm (Harrower). "Cortin" is also employed by a German (Degewop) and a Dutch firm (Organon Laboratories) for their commercial extracts of adrenal

39. Means, J. H.: Therapeutics of the Thyroid, J. A. M. A. **105:** 24 (July 6) 1935.

40. Thompson, W. O.; Thompson, Phebe K.; Taylor, S. G.; Nadler, S. B., and Dickie, Lois F. N.: The Pharmacology of the Thyroid in Man, J. A. M. A. **104:** 972 (March 23) 1935.

40a. The physiologic and therapeutic effects of parathyroid are considered in two papers of this series: Hanson, A. M.: Physiology of the Parathyroid, J. A. M. A. **105:** 113 (July 6) 1935. Aub, J. C.: Parathyroid Hormone Therapy, ibid. **105:** 197 (July 13) 1935.

41. Hartman, F. A.; MacArthur, C. G., and Hartman, W. E.: A Substance Which Prolongs the Life of Adrenalectomized Animals, Proc. Soc. Exper. Biol. & Med. **25:** 69 (Oct.) 1927.

42. Stewart, G. N., and Rogoff, J. M.: Studies on Adrenal Insufficiency: IX. The Influence of Extracts of Adrenal Cortex (Sheep and Cattle) on the Survival Period of Adrenalectomized Dogs and Cats, Am. J. Physiol. **91:** 254 (Dec.) 1929.

43. Hartman, F. A.: U. S. Patent 1,914,125, June 13, 1933. Britton and Silvette (Science **73:** 322 [March 20] 1931) cast doubt also on the potency of extracts made by the lipoid solvent method used by Hartman.

cortex. Thus the generic use of this term for any and all extracts of adrenal cortex leads to endless confusion; it should therefore be avoided.

Of the names employed to represent the life-sustaining principle of the adrenal cortex, the only one that is not objectionable from the standpoint of etymology is "interrenalin," proposed by Rogoff and Stewart,[44] who were the first to demonstrate the existence of this active principle in the gland.[45] Interrenalin is derived from "interrenal" gland, which is widely used among investigators as an inclusive designation for the gland represented in mammals by the adrenal cortex; in some species the interrenal gland forms an organ entirely separate from the chromaffin tissue (the adrenal medulla in mammals).

For the present, the Council on Pharmacy and Chemistry has adopted the generic term "adrenal cortex extract"; however, no extract of this type stands accepted by the Council.

Practically all adrenal cortical extracts as now prepared contain toxic contaminants [46] (choline, histamine, protein) [46a] which have been reported to cause serious reactions both in man [4b] and in animals [4c] on parenteral injection. For this reason the extracts prepared by Rogoff and Stewart [3a] were administered by mouth, by which route they were shown to be active (it is at present impossible to determine the relative activity by mouth and by parenteral injection in the human being). More recently Grollman and his collaborators [47] have proposed the oral use of adrenal cortical extracts. It appears, however, that none of the commercial preparations on the American market contain much, if any, of the life-sustaining principle (the question as to whether more than one active principle exists is at present controversial; the evidence is conflicting and confusing). Only one satisfactory method of assay for the active principle exists; that is, the definite prolongation of life beyond the maximum survival time of untreated completely adrenalectomized animals. When subjected to this test, eschatin (Parke, Davis & Co.) made by the method of Swingle and Pfiffner, for instance, was found by Rogoff [4c] to be not only not potent but toxic as well. The effects of extracts on blood urea, on the rate of production of muscular fatigue, or on the rate of growth of adrenalectomized animals (some of the methods employed at present) appear to be unsatisfactory as tests of potency. Consequently, the only reliable method for determining potency is largely qualitative and is difficult of standardization on a quantitative basis.

Further sources of error arise out of the use of commercial adrenal cortical extracts in patients erroneously diagnosed as having Addison's disease; most, if not all the so-called cures belong in this group. Still others occur through attributing improvement resulting from spontaneous remission in actual cases of Addison's disease as being due to the extract employed. Further discussion of this problem will be found in the paper in this series by Loeb.[3b]

One extract the potency of which appears to have been demonstrated indubitably both in adrenalectomized animals and in patients with Addison's disease is that of Rogoff.[48] This extract is not available commercially. Other potent extracts appear to have been prepared by investigators; but it seems that the difficulties of production on a commercial scale have not been surmounted.

PANCREAS

Insulin is discussed at length in two papers [49] of this series and need not be considered here. The products are described in New and Nonofficial Remedies. Pancreatin is considered in the article by Ivy; [49a] this preparation is described in the U. S. Pharmacopeia. Other extracts of the pancreas will be discussed in a later section of this paper.

LIVER AND STOMACH PREPARATIONS

The actions and uses of liver and stomach preparations have been considered at length in the paper by West.[4f] The following products (with two exceptions) stand accepted by the Council. (In view of the absence of satisfactory standards of antianemic potency for these products, no estimate of the relative potency will be made. It is expected that adequate standards will be established in the near future.)

Solutions for Oral Administration:

Chappel Liver Extract (Oral), N. N. R., Chappel Bros., Inc.
Concentrated Liver Extract-Armour, N. N. R., Armour & Co.
Solution Liver Extract (Lederle) for Oral Use, N. N. R., Lederle Laboratories, Inc.
Solution Liver Extract, Valentine, The Valentine Company, Inc.

Powders for Oral Administration:

Liver:

Liver Extract-Fairchild, N. N. R., Fairchild Brothers & Foster.
Liver Extract-Lederle, N. N. R., Lederle Laboratories, Inc.
Liver Extract-Lilly, N. N. R., Eli Lilly & Co.
Liver Extract-Parke, Davis & Co., N. N. R.
Liver Meal, N. N. R., Livermeal Corporation.

Stomach:

Soluble Stomach Extract-Fairchild, N. N. R., Fairchild Brothers & Foster.
Ventriculin, N. N. R., Parke, Davis & Co.

Stomach and Liver:

Extralin, N. N. R., Eli Lilly & Co.

Solutions for Parenteral Administration:

Chappel Liver Extract (Subcutaneous), N. N. R., Chappel Brothers, Inc.

44. Rogoff, J. M., and Stewart, G. N.: Studies on Adrenal Insufficiency: V. The Influence of Adrenal Extracts on the Survival Period of Adrenalectomized Dogs, Am. J. Physiol. **84:** 660 (April) 1928.

45. Rogoff, J. M.: The Adrenal Medulla, J. A. M. A. **104:** 2088 (June 8) 1935. Loeb.[3b]

46. Cleghorn, R. A.: Observations on Extracts of Beef Adrenal and Elasmobranch Interrenal Body, J. Physiol. **75:** 413 (Aug. 10) 1932. Eagle, E.: Presence and Significance of Choline in Cortico-Adrenal Extract, Proc. Soc. Exper. Biol. & Med. **30:** 1094 (May) 1933. Benham, Fisher, More and Thurgar.[4]

46a. Epinephrine may also be present. This and possibly one or more of the other contaminants may explain the alleged action of commercial adrenal cortical extracts in glaucoma and progressive myopia (Josephson, E. M.: Adrenal Cortex Hormone in Intra-Ocular Tension, Eye, Ear, Nose & Throat Monthly **13:** 453 [Jan.] 1935. Effect of Cortin on Intra-Ocular Tension in Glaucoma, Science **82:** 62 [July 19] 1935).

47. Grollman, Arthur; Firor, W. M., and Grollman, Ellis: Studies on the Adrenal: VIII. A Simple Preparation of the Adrenal Cortical Hormone Suitable for Oral Administration, J. Biol. Chem. **109:** 189 (April) 1935.

48. Rogoff, J. M., and Stewart, G. N.: The Influence of Adrenal Extracts on the Survival Period of Adrenalectomized Dogs, Science **66:** 327 (Oct. 7) 1927. Rogoff, J. M.: Addison's Disease: Further Report on Treatment with "Interrenalin" (Adrenal Cortical Extract), J. A. M. A. **99:** 1309 (Oct. 15) 1932.

49. Best, C. H.: The Internal Secretion of the Pancreas, J. A. M. A. **105:** 270 (July 27) 1935. Joslin, E. P.; Root, H. F.; White, Priscilla, and Marble, Alexander: Therapeutic Applications of Insulin, J. A. M. A. **105:** 359 (Aug. 3) 1935.

49a. Ivy, A. C.: Gastro-Intestinal Principles, J. A. M. A. **105:** 506 (Aug. 17) 1935.

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Lederle Solution Liver Extract Parenteral Refined and Concentrated, N. N. R., Lederle Laboratories, Inc. (This firm also markets a preparation approximately three times as concentrated as the one in N. N. R.)

Liver Extract (Intramuscular)-Parke, Davis & Co., N. N. R.

Solution Liver Extract Concentrated-Lilly, N. N. R.

Solution Liver Extract-Lilly, N. N. R., Eli Lilly & Co.

Other firms market liver extracts which are presumably potent; however, the foregoing products are sufficiently numerous to provide a wide choice; as they have met the Council's requirements as to antianemic potency they are to be preferred.

YELLOW BONE MARROW

Extracts of yellow bone marrow [50] have been proposed for use in the treatment of granulocytopenia. The number of cases in which they have been employed is too few to serve as a basis for evaluation of this remedy. Much more clinical investigation will be necessary.

Yellow Bone Marrow Concentrate, Armour & Co. This is a solution in oil (nature not stated) of an extract of yellow bone marrow from tibias and femurs of cattle obtained by alkaline hydrolysis and extraction with certain solvents (nature not stated). Each drop is said to represent 2 Gm. of fresh marrow fat. The average dose recommended by the manufacturer is 5 drops three times a day. More or less may be required; the dosage has not been adequately worked out. Frequent blood counts should be made during treatment.

THYMUS

While the preparation of active extracts of thymus has been reported by investigators,[51] no commercial preparations appear to be available in this country that contain the active principle or principles. There are as yet no clinical indications even for the active preparations.

Combinations of thymus with extracts of other organs such as posterior pituitary have no scientific basis.[52]

PINEAL BODY

Recent work on the pineal body indicates that this organ may have an endocrine function. A variety of effects have been observed following the injection of pineal extracts or implantation of pineal tissue into test animals.[53] Antiestrogenic, estrogenic, antigonadotropic and growth inhibiting effects have been reported by various investigators. It is too early to speculate as to the significance of these results. Although Burger [53] has reported that he has used a pineal extract in the treatment of certain cases of menorrhagia with good results, no data are presented. Much more needs to be known about the physiologic effects of such extracts before they are used therapeutically. There appear to be no active extracts of the pineal body available commercially in this country.

DEPRESSOR PRINCIPLES

A number of preparations claimed to cause vasodilatation have been proposed for use in the treatment of hypertension, angina pectoris, intermittent claudication and the like. The nature of the active principles involved, the site of action and the degree of therapeutic benefit occurring clinically are all controversial at present. The literature has grown to such proportions since 1926, when Frey and Kraut [54] announced the extraction from urine of a depressor principle ("kallikrein"), that it cannot be reviewed here. The substance occurring in urine was thought to be identical with a principle obtained from pancreas [55] and designated by the same name.

Among the extracts employed are products made from urine,[56] pancreas,[55] liver,[57] striated muscle [58] and kidney.[59] Some of the preparations are available commercially for either oral or parenteral administration. Although promising results have been claimed with a few of them, much more experimental work is required before their true status may be evaluated. The pertinent literature is reviewed by Wolffe, Findlay and Dessen.[60] These investigators employed an insulin-free pancreatic extract in the treatment of angina pectoris, with partial or complete relief of pain in the majority of their twenty cases. This extract produced cardiac slowing and a fall in blood pressure in experimental animals; it antagonized the pressor effect of epinephrine. With regard to the clinical use of insulin-free pancreatic extracts and muscle extracts in intermittent claudication, reference is made to the recent article by Barker, Brown and Roth.[61] The latter are of the opinion that the preparations employed by them produce their therapeutic effect in this condition primarily by supplying some agent which facilitates muscular contraction and not by causing vasodilatation.

The liver extract ("eutonon") proposed for use in the treatment of angina pectoris by Zuelzer,[57] has been found to contain tyramine and choline as its active principles.[62]

Encouraging results with kidney extracts in the treatment of hypertension were recently reported by Jablons,[59] but confirmatory work has not yet appeared. No commercial preparation of Jablons' extract appears to be available.

50. Giffin, H. Z., and Watkins, C. H.: Treatment of Secondary Anemia, J. A. M. A. **95:** 587 (Aug. 23) 1930.

51. Rowntree, L. G.: The Thymus Gland, J. A. M. A. **105:** 592 (Aug. 24) 1935.

52. Thymophysin Not Acceptable for N. N. R., Report of the Council on Pharmacy and Chemistry, J. A. M. A. **96:** 860 (March 14) 1931.

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Until more is known with regard to the nature and physiologic effects of the various commercial extracts,[63] they should be employed for experimental purposes only.

COMMENT

It is apparent from the foregoing discussion that clinical applications of many of the newer commercial glandular products are on a very unsatisfactory basis. Physicians, particularly those who do not have facilities for controlled clinical observation, would do well to be guided by the judgment of the Council on Pharmacy and Chemistry in the use of these products. The advertising propaganda of pharmaceutical manufacturers cannot be depended on as a safe guide in this respect.

Council on Pharmacy and Chemistry

REPORTS OF THE COUNCIL

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT.

PAUL NICHOLAS LEECH, Secretary.

PROGYNON-B AND THE OVARIAN FOLLICULAR HORMONE

Recently MacCorquodale, Thayer and Doisy[1] of St. Louis University reported the isolation in crystalline form of an estrogenic substance from the follicular fluid of hog ovaries. Estrogenic compounds previously isolated, such as theelin and theelol, had been obtained from other sources, in particular the urine of pregnant women; a pure estrogenic preparation had not before been isolated from the ovary itself. Consequently, the actual constitution of the ovarian follicular hormone or hormones was not known.

MacCorquodale, Thayer and Doisy reported that the crystalline product obtained by them from follicular fluid had approximately the same estrogenic potency as dihydroxyestrin (theelin is ketohydroxyestrin and theelol is trihydroxyestrin), that is, from four to eight times the activity of theelin. These investigators said in their preliminary report:[1b]

> "Although we have not yet accumulated sufficient material for complete analysis, our results indicate the identity of the hormone with dihydro-theelin [more accurately designated dihydroxyestrin]. The m-bromobenzoate of the hormone was prepared, and after three crystallizations had a melting point of 154°-155°. After four crystallizations the m-bromobenzoate prepared from a sample of pure dihydro-theelin melted at 155°-156°, and the dihydro-theelin obtained from it by saponification with dilute alcoholic alkali melted at 171°-172° after one crystallization. By saponification of the m-bromobenzoate of the hormone in the same manner the crystalline hormone was recovered and found to melt at 170°-171°."

It appears then that the only evidence at present available for considering the crystalline preparation from ovarian follicular fluid to be identical with dihydroxyestrin is the similarity of the estrogenic activity and of the melting points. This, of course, does not constitute proof from a chemical standpoint of the identity of the two preparations.

Despite the paucity of the evidence at present available, the Schering Corporation has made claims in its recent advertising literature that Progynon-B (said to be the benzoate of dihydroxyestrin, which the firm calls "benzoic acid ester of dihydro follicular hormone") is the "true female sex hormone, as was definitely proved by Doisy. . . ."

In an advertisement in the June 1935 issue of the *American Journal of Obstetrics and Gynecology* appears the following:

"SCHERING DIHYDRO
FOLLICULAR SUBSTANCE
Conceded to be Real Sex Hormone
PRODUCED SYNTHETICALLY
Six Times as Active as Commonly Known Follicular Substance

"That the true female sex hormone is not the follicular sex hormone that has been marketed under various names, as has been generally supposed, but that it is rather the dihydro form of this substance, has now been definitely established as scientific fact.

"This discovery comes as a result of the work of MacCorquodale, Thayer and Doisy of the St. Louis University School of Medicine and was announced at the meeting of the American Society of Biological Chemists in Detroit, April 10-13.

"Three years ago Schwenk and Hildebrandt prepared by reduction of the follicular sex hormone, the aforementioned dihydro follicular substance proved to be six times as active. These workers then ventured the opinion that this compound would prove to be the actual sex hormone which circulates in the body. Consequently, the keto form of follicular substance would only be found to be the excretion form of the hormone. Later, Wintersteiner, Schwenk and Whitman found the dihydro material in natural substances.

PROGYNON-B . . . The Real Female Sex Hormone.

"The dihydro follicular hormone, which is the true female sex hormone, has been produced synthetically by the laboratories of Schering Corporation in Bloomfield, N. J., for over a year under the name of Progynon-B. . . .

"Clinical use has shown that the results from the use of Progynon-B are far more satisfactory than can be secured with the ordinary so-called follicular hormones which are merely the excretion form of the true hormone. For amenorrhea, dysmenorrhea, menopausal disorders, and other deficiencies of the female sex cycle."

Inquiry was made of Dr. Doisy as to the status of the preparations concerned. Dr. Doisy replied in part:

"In our latest paper presented before the American Society of Biological Chemists we gave data to substantiate our claim of the isolation of the crystalline hormone contained in the liquor folliculi from *hog* ovaries. . . . Actually, our results do not exclude the possibility of the presence of other active estrogenic compounds in hog liquor folliculi.

"Furthermore, there is no definite evidence regarding the nature of the estrogenic substances of human ovaries. Reasoning by analogy is certainly fallacious, as is evidenced by the nature of the estrogenic substances in human urine—theelin and theelol—in both the combined and free forms, and in the urine of pregnant mares—theelin, dihydrotheelin (an isomer of the compound which we have obtained from hog liquor folliculi), equiline, equilenine and hippuline. We believe that the available evidence indicates that the active substance of hog liquor folliculi is present in an unconjugated form. So far as I know, there is no reason for believing that the conjugated form is the one secreted by the ovary. Furthermore, I know of no evidence that the conjugated forms appearing in the urine of pregnancy are benzoates.

"The Schering claim of greater activity seems to be sound but . . . has little significance. However, I must point out that the estimate of greater activity is limited to the production of cornification in the vagina. We do not know that the dihydro compound produces a greater effect on the uterus or mammary glands of experimental animals and there is no information that the dihydro compound is more active in the treatment of the human.

"The claim of a synthetic compound is certainly not warranted, since the dihydro compound is prepared from the keto-hydroxy compound by reduction of the carbonyl group. In other words, the chemist starts with the conjugated ring structure containing all the substituents in the correct position. Such a reaction does not correspond to the usual conception of synthesis."

The advertising claims of the Schering Corporation for Progynon-B are therefore inaccurate and misleading.[2] The Council voted that this report be published to correct the erroneous impressions created by the reprehensible advertising policy of this firm.

63. Among the available commercial extracts are: 1. Insulin-free pancreatic extracts: angioxyl (Laboratoire des Proxytases, Paris); padutin (Bayer); pancreatic tissue extract number 568 (Sharp and Dohme). 2. Skeletal muscle extracts: myofort (Richter); myorgal (Winthrop) (known in Europe as lacarnol); myoston (Henning); MAP (Henning) (muscle adenosine phosphoric acid). 3. Liver extract: eutonon (Promonta).

1. (a) MacCorquodale, D. W.; Thayer, S. A., and Doisy, E. A.: The Ovarian Follicular Hormone, Proc. Soc. Biol. Chem., April 10-13, 1935, p. lviii; (b) The Crystalline Ovarian Follicular Hormone, Proc. Soc. Exper. Biol. & Med. **32**: 1182 (April) 1935.

2. This report is not concerned with the overoptimistic claims as to the indications for and the therapeutic effectiveness of Progynon-B or other estrogenic preparations. In this respect the advertising claims of other firms for other estrogenic products are also open to severe censure. For a critical evaluation of the therapeutic usefulness of these preparations, reference is made to the Council's report "Estrogenic Substances: Theelin" (J. A. M. A. **100**: 1331 [April 29] 1933) and to Dr. Novak's article in the Series of Glandular Physiology and Therapy (The Therapeutic Use of Estrogenic Substances, J. A. M. A. **104**: 1815 [May 18] 1935).

MEDICAL EDUCATION IN THE UNITED STATES AND CANADA

ANNUAL PRESENTATION OF EDUCATIONAL DATA FOR THE ACADEMIC YEAR 1934-1935 BY THE COUNCIL ON MEDICAL EDUCATION AND HOSPITALS

This report for the academic year 1934-1935 includes either statistical data or editorial comment regarding the medical schools approved [1] by the Council on Medical Education and Hospitals during this period. Also included are revised lists of hospitals approved for internships and residencies in specialties and the Essentials of an Acceptable School of Occupational Therapy.

Figures are presented covering seventy-seven medical schools in the United States and ten in Canada, 697 hospitals approved for internships and 392 hospitals offering approved residencies in specialties.

These data are based on official reports from the institutions listed. Acknowledgment is tendered the officers of these institutions for their ready cooperation in supplying the facts included in this presentation as well as for other material furnished throughout the year enabling the Council to maintain its medical student and hospital registers efficiently.

RESURVEY OF MEDICAL EDUCATION

Forty-five institutions in the eastern part of the United States have been inspected during the past year in connection with the resurvey of medical education. Although the study is, of course, incomplete, certain conditions needing improvement have already been clearly revealed.

During the last ten years the number of medical students has greatly increased (table 10). A number of factors may have contributed to this result. The great increase in college enrolments since the war doubtless has created a much larger body of students who aspire to a professional career. In law schools a corresponding increase in the number of students has also been observed. In recent years, financial stringency has caused some medical schools to rely more largely on the income from student fees, and larger numbers of students have been accepted for the sake of gaining additional revenue. Unfortunately, in most instances the teaching staff has not been correspondingly strengthened or the physical plant commensurately enlarged. In consequence it has been found that too often faculties are undermanned and laboratories overcrowded. A more serious feature of increasing enrolments is the failure to maintain high academic standards in the selection of students. Too many applicants with poor scholastic records have been accepted, with inevitable impairment of the efficiency of the school.

When the Council first graded medical schools, nearly thirty years ago, the curriculum was sharply divided into two preclinical and two clinical years. More recently a transformation has been taking place by which clinical subjects are being pushed back into the first two years. So it comes about that institutions which, lacking clinical facilities, were approved as "two year schools" have been unable to keep pace with this development. Some readjustment, therefore, of the status of these institutions seems to be inevitable.

There has been noted a very uneven development of clinical facilities. Some schools own and operate their own hospitals and dispensaries. Some have affiliations whereby the university has the privilege of nominating or selecting the medical staff, while some other agency is responsible for the financial support of the hospital or dispensary. Others operate under less satisfactory arrangements, the school being obliged, in order to obtain any teaching privileges at all, to accept as members of its faculty men who owe their positions to other organizations with other aims, and who would not have been selected on the basis of training and experience for high positions of academic responsibility.

The lack of adequate clinical material is most strikingly evident in the field of obstetrics, and consequently failure to provide sufficient practical experience under competent supervision is one of the most serious defects thus far recorded.

PREMEDICAL EDUCATION

Since 1918 one of the essentials of an acceptable medical school has been a premedical requirement of two years of college work including courses in physics, chemistry and biology.

In June 1933 the following statement from the By-Laws [2] of the Association of American Medical Colleges was adopted by the Council as its premedical standard. In substance it does not differ from the two-year college prerequisite. No attempt is made to outline courses to be pursued in secondary schools.

SEC. 2.—Requirements for Admission. Admission to medical schools and medical colleges in membership in the association may be by:

(1) Satisfactory completion of a minimum of collegiate instruction, as provided below in subsection I; or by

(2) Examination, as provided in subsection II.

Subsection I. The minimum of collegiate credit required for entrance to medical schools and colleges in membership in the association shall be not less than two full academic years, which shall include English, theoretical and practical courses in physics and biology,[3] and in general and organic chemistry, completed in institutions approved by accrediting agencies acceptable to the executive council of the association.

Exception may be made under this section in that any member may admit applicants who have fulfilled the requirement in American and Canadian institutions not approved by such accrediting agencies, provided that all admissions so made be reported to the executive council and shall be published in the next annual report of the council.

All collegiate instruction given in satisfaction of this requirement must be based on the same entrance requirements and must be of the same quality and standard of instruction as that required for a baccalaureate degree in the institution in which the candidate received his preparation.

Subsection II. Admission to medical schools and medical colleges in the association may be by examination.

Examinations for the purpose of admission by this method shall be conducted by institutions acceptable to the executive council of the association, under the following conditions:

(*a*) Candidates who have completed two years of collegiate instruction and present evidence of general scholarship of high

(Continued on page 682)

1. Including three schools whose approval has recently been withdrawn. See footnotes to table 1, page 679.

2. Constitution and By-Laws of the Association of American Medical Colleges, amended Oct. 30, 1934.

3. Exceptions may be made in these subject requirements only in unusual cases. Proposed exceptions shall be presented to and approved by the executive council.

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TABLE 1.—*Statistics of Approved Medical Schools in the United States and Canada*

Marginal No.	Name and Location of School	1935-1936 Premedical Requirement in Years	Length of Course, Graduate Years	Students by Classes Session 1934-1935 1st Year	2d Year	3d Year	4th Year	5th Year or Intern Year	Totals	Graduates June July 1, 1934	Session 1935-1936 Begins 1935	Session 1935-1936 Ends 1936	Applications for Admission to the 1st Year Will Be Received Until	Executive Officer	Marginal No.
	ALABAMA														
1	University of Alabama School of Medicine, University (Tuscaloosa)	3	2	71	59	..	..	..	130	...	Sept. 12	May 26	.....	Stuart Graves, M.D., Dean	1
	ARKANSAS														
2	University of Arkansas School of Medicine, Little Rock	2	4	85	52	51	42	..	230	42	Oct. 2	June 8	.....	Frank Vinsonhaler, M.D., Dean	2
	CALIFORNIA														
3	University of California Medical School, Berkeley-San Francisco	3	5	64	62	58	55	53‡	239	51	Aug. 26	May 22	April	Langley Porter, M.D., Dean	3
4	College of Medical Evangelists, Loma Linda-Los Angeles	2	5	116	113	81	94	84‡	404	83	July 2	June 21	May	W. E. Macpherson, M.D., Dean, Loma Linda; Edward H. Risley, M.D., Dean, Los Angeles	4
5	University of Southern California School of Medicine, Los Angeles	3	5	54	48	44	30	35‡	176	35	Sept. 23	June 6	May	Paul S. McKibben, Ph.D., Dean	5
6	Stanford University School of Medicine, San Francisco	3	5	61	60	52	47	46‡	220	47	Sept. 24#	June 10	March	Loren Roscoe Chandler, M.D., Dean	6
	COLORADO														
7	University of Colorado School of Medicine, Denver	3	4	53	52	52	48	..	205	47	Sept. 30#	June 15	April	Maurice H. Rees, M.D., Dean	7
	CONNECTICUT														
8	Yale University School of Medicine, New Haven	3	4	47	58	55	47	..	207	47	Sept. 23	June 10	July	Stanhope Bayne-Jones, M.D., Dean	8
	DISTRICT OF COLUMBIA														
9	Georgetown University School of Medicine, Washington	3	4	120	120	134	113	..	493	113	Sept. 23	June 8	Feb.	David V. McCauley, S.J., Ph.D., Dean	9
10	George Washington University School of Medicine, Washington	2	4	73	69	71	71	..	284	71	Sept. 25	June 6	.....	Earl B. McKinley, M.D., Dean	10
11	Howard University College of Medicine, Washington	2	4	42	34	40	55	..	171	55	Sept. 24	June 5	August	Numa P. G. Adams, M.D., Dean	11
	GEORGIA														
12	Emory University School of Medicine, Atlanta	2	4	65	50	52	55	..	222	54	Sept. 30	June 8	June	Russell H. Oppenheimer, M.D., Dean	12
13	*University of Georgia School of Medicine, Augusta	2	4	41	31	38	34	..	144	34	Sept. 23	June 8	June	G. Lombard Kelly, M.D., Dean	13
	ILLINOIS														
14	Loyola University School of Medicine, Chicago	2	5	161	125	112	89	101‡	487	96	Sept. 25	June 13	Sept.	Louis D. Moorhead, M.D., Dean	14
15	Northwestern University Medical School, Chicago	3	5	128	120	164	145	160‡	557	146	Oct. 1#	June 13	May	Irving S. Cutter, M.D., Dean	15
16	University of Chicago, Rush Medical College	3	5	...	...	...	...	152‡	312†	152	Sept. 30#	June 16	April	Ernest E. Irons, M.D., Dean	16
17	University of Chicago, The School of Medicine of the Division of the Biological Sciences	3	5	...	...	...	...	29‡	336†	34	Oct. 2#	June 17	April	B. C. H. Harvey, M.D., Dean of Med. Students	17
18	University of Illinois College of Medicine, Chicago	2	5	175	160	142	137	145‡	614	145	Sept. 30	June 5	July	David J. Davis, M.D., Dean	18
	INDIANA														
19	Indiana University School of Medicine, Bloomington-Indianapolis	2	4	126	116	104	102	...	448	93	Sept. 17	June 15	.....	Burton D. Myers, M.D., Dean, Bloomington; Willis D. Gatch, M.D., Dean, Indianapolis	19
	IOWA														
20	State University of Iowa College of Medicine, Iowa City	2	4	104	90	95	65	...	354	62	Sept. 23	June 1	July	Ewen Murchison MacEwen, M.D., Dean	20
	KANSAS														
21	University of Kansas School of Medicine, Lawrence-Kansas City	2	4	77	73	70	70	...	287	67	Sept. 19#	June 8	June	H. R. Wahl, M.D., Dean	21
	KENTUCKY														
22	University of Louisville School of Medicine, Louisville	2	4	96	75	89	80	...	340	79	Sept. 19	June 6	May	John Walker Moore, M.D., Dean	22
	LOUISIANA														
23	Louisiana State University Medical Center, New Orleans	3	5	119	74	54	54	20‡	301	19	Sept. 16	June 1	.....	Arthur Vidrine, M.D., Dean	23
24	Tulane University of Louisiana School of Medicine, New Orleans	2	4	127	106	112	126	...	471	125	Sept. 27	June 10	April	Charles C. Bass, M.D., Dean	24
	MARYLAND														
25	Johns Hopkins University School of Medicine, Baltimore	Degree	4	68	71	68	69	...	276	69	Oct. 1	June 9	June	Alan M. Chesney, M.D., Dean	25
26	University of Maryland School of Medicine and College of Physicians and Surgeons, Baltimore	2	4	115	117	101	104	...	437	105	Sept. 24	June 6	.....	J. M. H. Rowland, M.D., Dean	26
	MASSACHUSETTS														
27	Boston University School of Medicine, Boston	3	4	69	63	64	57	...	253	55	Sept. 26	June 15	Sept.	Alexander S. Begg, M.D., Dean	27
28	Harvard University Medical School, Boston	2	4	125	127	134	137	...	523	137	Sept. 23	June 18	March	Charles Sidney Burwell, M.D., Dean	28
29	Tufts College Medical School, Boston	Degree	4	132	119	117	116	...	484	119	Sept. 25	June 15	May	A. Warren Stearns, M.D., Dean	29
	MICHIGAN														
30	University of Michigan Medical School, Ann Arbor	3	4	141	104	121	106	...	472	105	Sept. 30#	June 22	March	A. C. Furstenberg, M.D., Dean	30
31	Wayne University College of Medicine, Detroit	3	5	79	75	84	72	70‡	310	74	Sept. 26	June 19	June	William J. Stapleton, Jr., M.D., Assistant Dean	31
	MINNESOTA														
32	University of Minnesota Medical School, Minneapolis	2	5	151	141	120	80	165‡	502	123	Sept. 30#	June 15	July	Elias P. Lyon, Ph.D., Dean	32
	MISSISSIPPI														
33	**University of Mississippi School of Medicine, University	3	2	22	30	...	...	...	52	...	Sept. 18	June 1	.....	B. S. Guyton, M.D., Acting Dean	33
	MISSOURI														
34	University of Missouri School of Medicine, Columbia	3	2	46	36	...	...	...	82	...	Sept. 9	June 3	June	Dudley S. Conley, M.D., Dean	34
35	St. Louis University School of Medicine, St. Louis	2	4	146	127	124	121	...	518	110	Sept. 19	June 1	Sept.	Alphonse M. Schwitalla, S.J., Ph.D., Dean	35
36	Washington University School of Medicine, St. Louis	4	4	84	77	98	92	...	351	92	Sept. 26	June 9	Sept.	W. McKim Marriott, M.D., Dean	36
	NEBRASKA														
37	Creighton University School of Medicine, Omaha	2	4	92	63	78	70	...	303	69	Sept. 19	June 4	.....	Bryan M. Riley, M.D., Dean	37
38	University of Nebraska College of Medicine, Omaha	2	4	101	85	76	78	...	340	77	Sept. 23	June 8	.....	C. W. M. Poynter, M.D., Dean	38
	NEW HAMPSHIRE														
39	Dartmouth Medical School, Hanover	3	2	20	19	...	...	...	39	...	Sept. 19	June 15	.....	John P. Bowler, M.D., Dean	39

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	NEW YORK													
40	Albany Medical College, Albany	Degree	4	35	25	24	28	...	112	28	Sept. 30	June 8	July	Thomas Ordway, M.D., Dean	40
41	Long Island College of Medicine, Brooklyn	3	4	104	100	104	99	...	407	98	Sept. 30	June 2	May	Wade W. Oliver, M.D., Acting Dean	41
42	University of Buffalo School of Medicine, Buffalo	2	4	76	64	71	66	...	277	66	Sept. 30	June 10	Sept.	Edward W. Koch, M.D., Dean	42
43	Columbia University College of Physicians and Surgeons, New York	3	4	109	100	97	97	...	403	97	Sept. 25	June 13	.....	Willard C. Rappleye, M.D., Dean	43
44	Cornell University Medical College, Ithaca-New York	3 & Degree	4	76	77	69	65	...	287	64	Sept. 30	June 17	March	William S. Ladd, M.D., Acting Dean	44
45	New York Homeopathic Medical College and Flower Hosp., New York	2	4	91	90	83	64	...	328	63	Sept. 16	June 2	Sept.	Claude A. Burrett, M.D., Dean	45
46	New York University College of Medicine, New York	3 & Degree	4	135	134	134	130	...	533	126	Sept. 18	June 10	March	John Wyckoff, M.D., Dean	46
47	University of Rochester School of Medicine, Rochester	3	4	40	39	40	48	...	167	46	Sept. 16	June 15	May	George H. Whipple, M.D., Dean	47
48	Syracuse University College of Medicine, Syracuse	2	4	50	50	46	45	...	191	45	Sept. 26	June 1	May	Herman G. Weiskotten, M.D., Dean	48
	NORTH CAROLINA													
49	University of North Carolina School of Medicine, Chapel Hill	3	2	42	32	...	...	...	74	...	Sept. 19	June 9	.....	C. S. Mangum, M.D., Dean	49
50	Duke University School of Medicine, Durham	2	6	..	..	...	...	34‡	210†	47	Sept. 30	June 13	.....	Wilburt C. Davison, M.D., Dean	50
51	Wake Forest College School of Medicine, Wake Forest	3	2	33	30	...	...	...	63	...	Sept. 12	June 2	July	Thurman D. Kitchin, M.D., Dean	51
	NORTH DAKOTA													
52	University of North Dakota School of Medicine, Grand Forks	3	2	31	39	...	...	...	70	...	Sept. 17	June 9	.....	H. E. French, M.D., Dean	52
	OHIO													
53	University of Cincinnati College of Medicine, Cincinnati	3	5	70	79	70	69	73‡	288	73	Sept. 23	June 5	March	Alfred Friedlander, M.D., Dean	53
54	Western Reserve University School of Medicine, Cleveland	3 & Degree	4	70	68	59	71	...	277	71	Sept. 19	June 10	Sept.	Torald Sollmann, M.D., Dean	54
55	Ohio State University College of Medicine, Columbus	3	4	100	98	89	86	...	373	83	Oct. 1	June 15	July	J. H. J. Upham, M.D., Dean	55
	OKLAHOMA													
56	University of Oklahoma School of Medicine, Oklahoma City	2	4	63	59	59	55	...	236	55	Sept. 16	June 8	August	Robert U. Patterson, M.D., Dean	56
	OREGON													
57	University of Oregon Medical School, Portland	3	4	67	53	59	55	...	234	54	Oct. 1	June 4	July	Richard B. Dillehunt, M.D., Dean	57
	PENNSYLVANIA													
58	Hahnemann Medical College and Hospital of Philadelphia	2	4	102	135	99	102	...	408	102	Sept. 30	June 11	.....	William A. Pearson, Ph.C., Dean	58
59	Jefferson Medical College of Philadelphia	Degree	4	144	133	138	142	...	557	142	Sept. 23	June 5	.....	Ross V. Patterson, M.D., Dean	59
60	Temple University School of Medicine, Philadelphia	3	4	113	107	123	105	...	448	100	Sept. 25	June 11	May	William N. Parkinson, M.D., Dean	60
61	University of Pennsylvania School of Medicine, Philadelphia	3	4	128	127	140	136	...	531	134	Sept. 23	June 17	March	William Pepper, M.D., Dean	61
62	Woman's Medical College of Pennsylvania, Philadelphia	3	4	38	25	35	34	...	132	32	Sept. 25	June 3	Sept.	Martha Tracy, M.D., Dean	62
63	University of Pittsburgh School of Medicine, Pittsburgh	2	4	65	70	63	65	...	263	65	Sept. 23	June 10	May	R. R. Huggins, M.D., Dean	63
	SOUTH CAROLINA													
64	Medical College of the State of South Carolina, Charleston	2	4	42	43	33	44	...	162	41	Sept. 26	June 4	July	Robert Wilson, M.D., Dean	64
	SOUTH DAKOTA													
65	University of South Dakota School of Medicine, Vermillion	2	2	30	23	...	...	...	53	...	Sept. 18	June 8	July	J. C. Ohlmacher, M.D., Dean	65
	TENNESSEE													
66	University of Tennessee College of Medicine, Memphis	2	4	132	86	112	99	...	429	99	July 10§	June 6	.....	O. W. Hyman, Ph.D., Dean	66
67	Meharry Medical College, Nashville	2	4	75	40	33	41	...	189	40	Oct. 1	May 28	Sept.	John J. Mullowney, M.D., President	67
68	Vanderbilt University School of Medicine, Nashville	3	4	54	46	51	52	...	203	51	Sept. 25	June 10	.....	Waller S. Leathers, M.D., Dean	68
	TEXAS													
69	Baylor University College of Medicine, Dallas	2	4	124	91	82	79	...	376	79	Sept. 30	June 1	Sept.	W. H. Moursund, M.D., Dean	69
70	University of Texas School of Medicine, Galveston	2	4	115	93	70	85	...	359	82	Oct. 1	May 30	July	W. S. Carter, M.D., Dean	70
	UTAH													
71	University of Utah School of Medicine, Salt Lake City	3	2	30	30	...	...	...	60	...	Sept. 26	June 6	April	L. L. Daines, M.D., Dean	71
	VERMONT													
72	University of Vermont College of Medicine, Burlington	2	4	45	51	41	36	...	173	35	Sept. 19	June 22	July	James N. Jenne, M.D., Dean	72
	VIRGINIA													
73	University of Virginia Department of Medicine, Charlottesville	2	4	75	64	53	54	...	246	54	Sept. 12	June 9	July	J. Carroll Flippin, M.D., Dean	73
74	Medical College of Virginia, Richmond	3	4	94	77	83	78	...	332	76	Sept. 17	June 2	.....	Lee E. Sutton, Jr., M.D., Dean	74
	WEST VIRGINIA													
75	***West Virginia University School of Medicine, Morgantown	2	2	81	60	...	...	...	141	...	Sept. 16	June 9	Sept.	Edward J. Van Liere, M.D., Acting Dean	75
	WISCONSIN													
76	University of Wisconsin Medical School, Madison	2	4	115	96	53	53	...	317	55	Sept. 25	June 22	March	William S. Middleton, M.D., Dean	76
77	Marquette University School of Medicine, Milwaukee	2	5	99	86	64	63	66‡	312	66	Sept. 20	June 17	.....	Eben J. Carey, M.D., Dean	77
	CANADA													
78	University of Alberta Faculty of Medicine, Edmonton, Alta	..	6	42	29	39	38	20§	197	29	Sept. 26	April 30	Sept.	Allan C. Rankin, M.D., Dean	78
79	University of Manitoba Faculty of Medicine, Winnipeg, Man	2	5	59	40	49	54	53‡	202	44	Sept. 20	May 25	March	A. T. Mathers, M.D., Dean	79
80	Dalhousie University Faculty of Medicine, Halifax, N. S.	2	5	50	41	32	28	24‡	151	22	Sept. 10	May 12	Sept.	H. G. Grant, M.D., Dean	80
81	Queen's University Faculty of Medicine, Kingston, Ont	..	6	60	57	53	48	46§	310	48	Sept. 26	May 20	Sept.	Frederick Etherington, M.D., Dean	81
82	University of Western Ontario Medical School, London, Ont	..	6	38	36	47	47	28§	229	34	Sept. 23	May 16	Sept.	F. J. H. Campbell, M.D., Dean	82
83	University of Toronto Faculty of Medicine, Toronto, Ont	..	6	134	108	143	127	122§	816	110	Sept. 24	May 16	Sept.	J. G. FitzGerald, M.D., Dean	83
84	McGill University Faculty of Medicine, Montreal, Que	3	5	111	83	98	106	106	504	103	Sept. 18	April 28	March	Charles F. Martin, M.D., Dean	84
85	University of Montreal Faculty of Medicine, Montreal, Que	1	5	41	46	56	41	37‡	184	35	Sept. 15	June 15	August	Télesphore Parizeau, M.D., Dean	85
86	Laval University Faculty of Medicine, Quebec, Que	Degree	5	71	51	39	44	41	246	32	Sept. 10	May 30	Sept.	P. C. Dagneau, M.D., Dean	86
87	University of Saskatchewan School of Medical Sciences, Saskatoon, Sask.	2	2	27	25	...	...	...	52	...	Sept. 23	May 8	August	W. S. Lindsay, M.B., Dean	87

* Approval withdrawn Feb. 11, 1934, without prejudice to the students then enrolled. In June 1934, and again in June 1935, recognition was accorded to the students entering in September of those years.

** Approval withdrawn Feb. 12, 1933, without prejudice to the students then enrolled. In September 1933 recognition was accorded to the first year class of 1933-1934.

*** Approval withdrawn Feb. 17, 1935, without prejudice to the students then enrolled.

† Enrolment not on above table by classes for the two medical schools of the University of Chicago and Duke University.

‡ Fifth year (internship) enrolment not included in the total column.

§ Sixth year enrolment: Alberta, 2; Queen's, 46; Western Ontario, 33; Toronto, 112.

‖ # Students admitted at different times of the year: Stanford, second year January 2; Colorado, advanced classes January 6 and March 30; Northwestern, beginning of any quarter; Rush, March 30; University of Chicago, advanced classes the beginning of any quarter; Kansas, February 5; Michigan, February 10; Minnesota, January 6; Tennessee, September 26, 1935, January 1 and March 19, 1936.

TABLE 2.—*Birthplace*

Marginal Number	Name of School	Alabama	Arizona	Arkansas	California	Colorado	Connecticut	Delaware	Dist. of Columbia	Florida	Georgia	Idaho	Illinois	Indiana	Iowa	Kansas	Kentucky	Louisiana	Maine	Maryland	Massachusetts	Michigan	Marginal Number
1	University of Alabama School of Medicine	48	1	..	7	1	2	..	4	..	..	..	2	..	..	3	2	..	1	..	4	1	1
2	University of Arkansas School of Medicine	3	..	126	1	..	1	..	..	1	2	..	3	6	1	2	..	3	..	..	..	..	2
3	University of California Medical School	1	2	2	118	4	1	..	..	..	1	2	5	..	3	2	..	..	..	1	3	5	3
4	College of Medical Evangelists	..	1	3	88	11	1	..	2	1	4	5	7	7	8	4	1	..	2	11	5	20	4
5	Univ. of Southern California School of Medicine	..	2	1	57	6	2	..	..	..	1	2	9	3	5	6	1	1	..	..	3	5	5
6	Stanford University School of Medicine	..	5	..	178	1	..	..	1	..	..	1	1	1	..	..	..	..	..	2	..	2	6
7	University of Colorado School of Medicine	..	..	..	6	153	..	..	..	..	..	1	3	2	..	..	..	..	..	..	2	1	7
8	Yale University School of Medicine	..	..	1	1	1	42	..	2	..	..	..	8	1	..	..	..	1	6	3	24	1	8
9	Georgetown University School of Medicine	1	..	..	2	1	19	5	22	..	..	1	4	..	1	1	..	1	8	6	31	4	9
10	George Washington Univ. School of Medicine	..	2	1	2	1	5	..	58	..	2	5	5	4	1	1	..	1	2	8	9	4	10
11	Howard University College of Medicine	3	1	2	..	..	1	..	10	3	7	..	2	..	..	1	3	2	..	8	3	..	11
12	Emory University School of Medicine	13	..	1	..	..	1	..	..	14	129	..	..	..	..	1	2	1	..	..	..	..	12
13	University of Georgia School of Medicine	1	..	..	..	..	..	..	..	..	120	..	..	1	..	..	..	..	..	1	2	..	13
14	Loyola University School of Medicine	..	1	..	6	2	3	..	..	1	..	..	311	16	2	1	1	..	..	3	20	14
15	Northwestern University Medical School	..	3	..	17	2	1	1	..	..	..	13	218	16	17	16	..	..	1	..	17	15
16	Rush Medical College	9	..	..	7	..	1	..	2	1	7	74	7	4	..	1	..	..	5	11	16
17	School of Med. of the Div. of the Biological Sc	2	..	..	5	1	2	..	2	3	3	1	155	13	8	1	1	2	..	1	2	19	17
18	University of Illinois College of Medicine	..	..	..	4	1	1	..	..	..	..	1	435	12	9	4	2	..	..	1	4	1	18
19	Indiana University School of Medicine	1	..	..	2	1	..	..	..	..	..	..	19	366	2	..	9	..	1	..	2	2	19
20	State University of Iowa College of Medicine	..	..	..	..	..	..	..	1	..	..	..	..	..	344	..	1	..	..	..	..	..	20
21	University of Kansas School of Medicine	..	1	2	1	5	..	..	..	..	..	1	8	1	4	175	..	..	..	..	1	1	21
22	University of Louisville School of Medicine	4	..	..	2	..	1	..	..	3	..	1	9	24	1	2	166	..	..	..	1	6	22
23	Louisiana State University Medical Center	10	..	..	2	..	..	1	4	5	1	1	..	..	2	1	..	207	..	..	1	1	23
24	Tulane University of Louisiana School of Med	49	3	24	2	..	..	..	1	35	7	..	4	..	1	..	7	119	..	..	2	..	24
25	Johns Hopkins University School of Medicine	4	..	4	9	..	3	1	6	5	6	..	8	5	2	1	4	..	1	62	8	6	25
26	U. of Maryland Sch. of Med. and Coll. of P. & S.	1	..	..	..	..	11	1	5	..	1	..	2	2	1	..	2	..	2	182	8	..	26
27	Boston University School of Medicine	..	..	..	..	..	10	..	..	..	..	..	..	..	1	..	..	..	13	..	154	2	27
28	Harvard University Medical School	8	2	..	11	5	6	..	1	1	3	1	17	7	6	4	6	1	13	3	127	13	28
29	Tufts College Medical School	..	..	..	1	..	49	..	1	..	..	..	..	..	..	..	..	..	23	..	226	..	29
30	University of Michigan Medical School	..	..	..	2	..	4	..	1	1	1	..	11	12	1	2	3	..	3	1	13	293	30
31	Wayne University College of Medicine	1	1	..	..	1	2	..	..	..	..	..	9	6	1	1	4	..	..	3	6	147	31
32	University of Minnesota Medical School	..	..	..	1	..	1	..	..	..	..	..	1	..	3	2	..	..	..	..	1	..	32
33	University of Mississippi School of Medicine	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	33
34	University of Missouri School of Medicine	..	..	..	1	1	..	..	..	..	..	..	6	..	..	2	..	..	..	..	..	6	34
35	St. Louis University School of Medicine	2	4	..	23	4	7	..	..	1	1	2	46	12	4	12	5	..	..	..	3	7	35
36	Washington University School of Medicine	8	3	1	25	1	..	..	..	3	1	6	38	8	3	10	2	..	..	..	2	..	36
37	Creighton University School of Medicine	..	2	1	58	1	2	..	1	..	..	..	7	2	21	7	..	..	..	..	..	1	37
38	University of Nebraska College of Medicine	..	..	1	4	7	..	..	..	..	1	..	9	..	36	7	1	..	..	..	..	3	38
39	Dartmouth Medical School	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	7	..	39
40	Albany Medical College	..	..	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..	1	..	6	..	40
41	Long Island College of Medicine	..	..	..	..	..	10	1	..	..	..	..	1	1	..	1	..	..	..	..	3	..	41
42	University of Buffalo School of Medicine	1	..	..	..	..	..	..	..	1	..	..	2	..	..	..	..	1	..	..	2	1	42
43	Columbia University College of Phys. and Surgs.	2	1	1	5	1	24	..	..	1	1	..	1	2	..	1	..	1	4	2	14	1	43
44	Cornell University Medical College	..	..	..	3	2	6	..	1	1	5	1	1	1	2	2	2	1	1	1	11	2	44
45	N. Y. Homeopathic Med. Coll. and Flower Hosp.	..	..	..	2	..	8	..	1	1	1	..	..	1	..	..	..	..	2	3	4	45
46	New York University College of Medicine	1	..	..	1	1	9	..	1	1	..	..	2	1	..	..	1	1	1	..	8	..	46
47	University of Rochester School of Medicine	..	..	..	4	..	5	..	..	..	1	..	4	..	2	..	..	..	..	..	11	8	47
48	Syracuse University College of Medicine	..	..	..	..	..	3	..	..	..	..	..	5	..	..	..	..	..	1	..	1	2	48
49	University of North Carolina School of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	..	49
50	Duke University School of Medicine	1	..	1	1	..	1	1	3	2	2	..	3	2	2	1	4	1	..	8	1	1	50
51	Wake Forest College School of Medicine	1	..	..	..	..	..	..	1	2	..	..	..	..	..	..	..	..	..	..	..	..	51
52	University of North Dakota School of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	..	52
53	University of Cincinnati College of Medicine	1	..	..	1	..	2	..	..	1	..	1	14	..	1	28	1	..	..	..	2	2	53
54	Western Reserve University School of Medicine	1	..	..	1	1	2	..	..	..	2	..	6	6	..	1	..	..	1	1	8	1	54
55	Ohio State University College of Medicine	2	..	..	1	..	1	..	..	..	..	..	4	8	1	1	2	..	1	..	1	1	55
56	University of Oklahoma School of Medicine	1	..	10	4	2	..	..	..	1	1	3	..	1	8	8	1	..	..	..	..	..	56
57	University of Oregon Medical School	..	..	..	2	..	..	..	..	..	5	..	..	..	..	..	..	..	..	..	..	..	57
58	Hahnemann Med. Coll. and Hosp. of Philadelphia	..	..	..	1	..	9	10	2	2	1	..	2	3	..	1	1	1	3	..	5	2	58
59	Jefferson Medical College of Philadelphia	1	..	..	3	1	9	10	1	1	1	..	1	3	..	3	..	..	5	6	6	3	59
60	Temple University School of Medicine	..	..	..	2	..	1	..	..	4	..	..	1	..	1	..	..	..	1	1	..	1	60
61	University of Pennsylvania School of Medicine	2	2	..	2	..	2	3	2	..	1	..	2	2	..	3	..	..	3	5	5	5	61
62	Woman's Medical College of Pennsylvania	..	..	..	4	..	2	..	..	..	..	..	1	..	..	..	1	..	..	1	6	2	62
63	University of Pittsburgh School of Medicine	..	..	..	1	..	1	1	1	..	..	..	1	..	..	..	..	1	..	..	1	1	63
64	Medical College of the State of South Carolina	1	..	..	..	..	..	..	1	2	3	..	..	..	..	..	1	..	..	..	..	..	64
65	University of South Dakota School of Medicine	..	..	1	3	..	..	..	..	..	..	..	..	..	7	..	..	..	..	..	..	..	65
66	University of Tennessee College of Medicine	17	..	12	1	1	1	..	1	4	5	..	13	6	2	1	23	1	..	..	1	66
67	Meharry Medical College	4	..	6	4	..	..	..	9	5	10	..	4	..	..	2	..	12	..	4	..	3	67
68	Vanderbilt University School of Medicine	19	1	1	2	..	..	..	..	1	6	1	5	2	..	..	30	..	..	..	4	7	68
69	Baylor University College of Medicine	3	1	3	3	3	1	..	1	..	..	2	11	..	3	4	4	8	..	..	1	4	69
70	University of Texas School of Medicine	1	..	7	..	2	1	..	..	..	1	1	1	..	1	3	..	4	..	..	..	1	70
71	University of Utah School of Medicine	..	..	..	2	..	..	..	..	..	..	..	6	1	..	1	2	..	..	..	..	1	71
72	University of Vermont College of Medicine	..	..	..	1	..	13	2	..	..	..	..	..	..	..	..	..	..	8	..	21	..	72
73	University of Virginia Department of Medicine	..	..	..	..	..	2	4	1	2	2	..	..	..	..	..	3	..	..	4	2	..	73
74	Medical College of Virginia	1	..	..	6	..	3	..	2	3	..	..	..	..	..	..	2	..	..	2	1	2	74
75	West Virginia University School of Medicine	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	1	..	..	2	..	..	75
76	University of Wisconsin Medical School	..	..	..	..	2	..	..	..	2	2	22	2	2	4	..	1	..	..	..	..	2	76
77	Marquette University School of Medicine	..	..	..	4	1	1	..	..	..	..	9	2	3	..	..	..	..	..	..	2	21	77
78	University of Alberta Faculty of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	2	78
79	University of Manitoba Faculty of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	79
80	Dalhousie University Faculty of Medicine	..	..	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	80
81	Queen's University Faculty of Medicine	..	..	..	1	..	1	..	..	..	..	1	..	..	..	..	..	..	..	..	2	..	81
82	University of Western Ontario Medical School	..	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	82
83	University of Toronto Faculty of Medicine	..	..	..	3	..	..	..	..	..	..	..	..	1	2	..	..	..	1	..	4	2	83
84	McGill University Faculty of Medicine	..	1	..	33	..	6	..	..	..	1	1	5	1	4	..	..	1	6	1	31	9	84
85	University of Montreal Faculty of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	6	..	85
86	Laval University Faculty of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	86
87	Univ. of Saskatchewan School of Med. Sciences	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	87
	Total	230	40	215	746	229	308	45	136	119	345	74	1549	589	529	369	341	375	115	336	927	597	

V 1 193

of Students

Marginal Number	Minnesota	Mississippi	Missouri	Montana	Nebraska	Nevada	New Hampshire	New Jersey	New Mexico	New York	North Carolina	North Dakota	Ohio	Oklahoma	Oregon	Pennsylvania	Rhode Island	South Carolina	South Dakota	Tennessee	Texas	Utah	Vermont	Virginia	Washington	West Virginia	Wisconsin	Wyoming	U. S. Possessions	Foreign	Canada	Totals	Marginal Number
1	..	1	..	..	..	..	..	11	..	20	1	..	4	..	..	9	2	..	..	..	..	..	1	..	..	2	1	..	..	..	..	130	1
2	1	2	17	..	2	..	..	7	1	21	1	..	1	8	..	1	..	..	..	4	11	..	..	..	1	1	..	..	1	1	..	230	2
3	2	..	3	2	3	1	..	5	..	17	..	1	4	..	3	7	..	..	3	1	..	2	..	..	3	..	2	1	..	22	7	239	3
4	10	4	5	4	5	2	..	7	1	12	2	6	8	5	11	8	2	..	4	7	7	1	..	1	27	..	10	1	6	34	13	404	4
5	4	..	5	1	6	1	..	..	3	10	..	1	5	..	1	5	1	..	1	..	1	6	..	1	4	..	4	..	2	8	4	176	5
6	2	..	1	..	1	2	..	2	2	..	1	1	1	..	1	..	..	..	..	..	2	..	..	..	7	..	1	..	2	1	1	220	6
7	1	..	1	1	2	1	..	1	2	9	..	..	3	2	1	..	..	..	..	..	2	5	..	..	1	1	..	1	..	..	..	205	7
8	1	..	4	1	2	1	2	16	..	43	..	..	8	..	1	13	7	..	..	..	1	2	1	1	1	1	..	..	1	10	..	207	8
9	..	..	..	3	..	..	1	66	..	132	2	1	19	..	..	80	27	..	..	..	..	1	1	1	2	3	..	1	1	24	1	493	9
10	2	1	1	1	1	1	..	13	2	56	1	..	8	..	..	30	..	2	1	4	2	8	1	9	2	1	2	..	..	24	..	284	10
11	..	3	3	..	..	..	..	9	..	15	11	..	1	..	..	15	1	6	..	..	2	..	..	14	..	2	..	..	..	43	..	171	11
12	..	6	1	..	1	..	..	2	..	12	12	..	8	..	..	1	..	6	..	5	1	..	..	1	..	..	..	..	..	4	..	222	12
13	..	..	..	..	..	..	..	1	..	6	3	..	..	1	..	2	..	1	..	..	..	..	..	2	..	..	1	..	..	2	..	144	13
14	2	..	1	1	3	1	..	6	..	38	..	3	32	..	..	20	..	..	..	..	..	..	..	..	2	2	4	..	3	2	1	487	14
15	15	..	8	11	12	..	..	4	3	6	4	18	11	2	5	4	..	..	10	1	2	19	..	1	46	4	44	1	3	1	..	557	15
16	8	1	8	2	..	..	2	8	..	33	4	14	12	1	..	7	..	..	20	..	3	7	..	..	2	23	23	..	1	..	4	312	16
17	5	..	2	4	3	1	..	11	..	28	..	4	10	..	1	6	..	..	1	1	3	3	..	1	8	..	13	1	3	6	1	329	17
18	5	2	8	1	3	..	..	6	1	20	1	..	9	2	1	4	..	..	2	..	1	..	..	..	2	1	10	2	2	48	5	614	18
19	..	..	6	..	..	..	..	7	..	8	..	1	9	1	1	2	..	..	..	1	1	..	..	..	..	..	1	..	..	8	..	448	19
20	..	..	..	..	..	..	..	..	..	3	..	..	..	..	..	1	..	..	1	..	..	..	..	..	..	..	..	..	..	9	..	374	20
21	1	..	57	1	4	..	..	2	..	..	..	..	..	9	1	2	..	..	1	..	4	..	..	..	..	1	1	..	..	3	..	287	21
22	2	3	11	1	..	..	..	3	..	30	..	1	27	1	..	8	..	1	..	1	1	5	..	3	1	12	2	..	1	5	1	340	22
23	..	6	..	..	..	..	..	4	..	11	6	..	1	..	..	4	..	..	3	..	15	4	..	1	2	2	..	3	3	..	..	301	23
24	..	54	5	4	..	..	..	6	2	10	6	..	1	13	..	3	..	6	..	8	67	1	..	1	..	1	1	..	..	26	..	471	24
25	8	..	2	..	1	1	..	14	1	32	4	1	18	4	2	21	1	3	..	4	3	..	..	14	..	1	3	..	..	3	..	276	25
26	..	..	..	..	..	..	..	38	..	62	16	..	2	1	..	56	2	2	..	3	..	6	..	5	..	15	..	..	5	13	3	437	26
27	..	..	..	..	..	..	14	4	..	37	..	..	2	..	..	3	8	..	..	..	..	..	1	..	..	..	..	..	1	3	..	253	27
28	7	1	10	1	5	2	10	25	1	65	7	2	22	1	3	24	9	3	..	2	11	11	8	9	11	2	8	..	2	20	6	521	28
29	..	..	..	..	..	..	20	2	..	18	..	1	1	..	2	2	30	..	..	..	..	..	2	..	..	1	1	..	3	..	1	484	29
30	2	1	3	2	1	..	..	19	..	63	1	2	44	1	2	28	1	..	..	2	1	..	..	2	2	1	5	1	3	23	2	472	30
31	1	..	1	..	..	..	..	1	..	28	..	..	29	..	..	13	1	..	..	..	..	..	..	..	..	1	2	3	..	35	13	310	31
32	437	..	2	9	1	..	..	1	..	5	..	12	1	1	..	..	..	..	9	..	..	..	..	..	..	3	..	10	..	2	..	502	32
33	..	47	..	..	..	..	..	..	..	2	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	52	33
34	..	..	63	..	1	..	..	1	..	2	..	..	..	..	..	..	..	..	..	..	2	..	..	..	..	..	..	..	..	2	..	82	34
35	6	..	106	6	1	1	..	19	1	91	..	..	84	8	..	35	2	..	..	..	5	4	1	1	8	2	1	..	1	8	2	518	35
36	..	..	157	2	..	1	..	3	..	16	2	1	13	4	1	6	..	..	1	4	4	3	..	1	10	2	4	..	4	..	..	351	36
37	7	..	6	8	74	1	..	5	4	42	..	..	6	4	3	6	..	..	8	..	..	2	2	..	11	..	2	5	3	..	1	393	37
38	4	..	14	2	220	..	..	..	..	3	..	2	3	1	..	1	..	..	6	..	..	2	..	..	..	..	2	4	1	3	3	340	38
39	..	..	..	..	..	..	7	6	..	9	..	..	1	..	..	2	..	..	..	..	..	..	4	..	..	1	..	1	..	..	..	39	39
40	..	..	..	..	..	..	..	3	..	91	1	..	1	..	..	2	1	..	..	..	..	..	..	..	..	..	..	..	..	4	..	112	40
41	..	..	..	..	1	..	..	43	..	311	1	..	2	1	1	5	1	..	..	..	..	..	..	..	..	..	1	..	..	22	..	807	41
42	..	..	..	..	..	..	..	3	..	240	..	..	1	..	..	14	..	..	..	..	..	..	..	1	..	..	..	..	..	8	2	277	42
43	2	..	..	..	..	1	3	65	..	237	..	..	4	..	..	3	4	2	..	..	..	3	..	2	4	1	3	..	5	7	2	403	43
44	2	..	..	1	..	..	2	32	1	145	3	..	8	..	..	20	2	2	..	..	..	2	1	1	4	3	1	1	..	11	2	287	44
45	1	..	..	..	..	..	1	31	..	216	..	..	8	..	..	7	12	1	..	..	1	..	..	1	..	..	..	..	..	24	..	328	45
46	..	..	2	..	..	..	1	39	..	415	1	..	3	..	..	8	..	..	..	1	1	..	..	..	..	1	1	..	..	31	1	533	46
47	..	..	..	..	..	..	1	6	..	94	..	..	17	..	..	9	..	..	..	..	..	1	..	1	..	1	..	1	5	1	1	167	47
48	..	..	..	..	1	..	1	12	..	132	3	..	3	1	1	5	2	..	..	..	..	..	..	1	2	..	..	1	..	1	1	191	48
49	..	..	..	..	..	..	..	4	..	65	..	..	..	..	..	1	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	74	49
50	1	1	..	1	2	..	1	13	..	30	37	1	8	3	2	25	..	7	1	5	3	1	1	9	3	6	1	..	12	1	210	50
51	..	..	..	..	..	..	..	1	..	..	52	..	..	..	..	..	..	4	..	..	..	..	..	2	..	..	..	..	..	..	..	63	51
52	10	..	1	..	..	..	..	1	..	1	..	51	..	..	..	1	..	..	..	1	..	..	..	..	..	2	..	..	1	1	70	52
53	1	..	3	..	..	..	..	2	..	14	1	..	186	..	1	8	..	..	1	2	2	..	..	1	..	3	..	..	1	8	..	288	53
54	..	..	2	1	..	..	..	3	..	12	..	..	171	..	..	30	..	..	..	..	1	..	..	2	3	4	2	..	2	13	1	277	54
55	..	..	1	..	2	..	..	4	..	11	..	..	287	..	..	13	..	..	..	1	2	..	..	2	..	5	1	..	3	19	..	373	55
56	1	..	11	..	2	..	..	..	1	2	1	..	4	152	..	6	..	..	..	4	12	..	..	..	..	..	..	..	..	..	..	236	56
57	2	..	..	..	..	..	..	1	..	1	..	1	..	..	..	1	..	..	..	..	..	2	..	..	54	..	..	1	1	1	..	234	57
58	..	1	2	..	..	..	..	70	..	47	..	..	17	1	..	304	3	..	..	..	1	..	1	..	..	..	1	..	6	1	..	498	58
59	2	..	1	1	1	..	2	54	..	43	15	..	24	..	3	298	14	1	..	2	..	3	1	2	1	12	1	..	3	16	1	557	59
60	..	..	..	..	..	..	..	48	..	15	7	..	3	..	..	354	1	..	..	..	..	..	..	..	..	2	1	..	5	..	..	448	60
61	1	..	7	1	1	1	2	41	..	31	24	1	14	3	..	304	..	1	1	6	2	6	..	3	2	6	3	1	2	21	..	531	61
62	1	..	..	2	1	..	..	9	..	34	3	1	7	..	..	42	1	..	..	1	..	..	..	..	1	1	2	..	1	8	..	132	62
63	1	..	..	..	..	..	..	..	..	1	..	..	2	..	..	222	..	..	..	..	..	..	1	..	..	2	..	..	..	5	1	263	63
64	..	..	..	..	..	..	..	1	..	9	10	..	..	..	..	1	131	..	..	..	..	..	..	..	..	..	..	..	..	2	..	162	64
65	3	..	..	..	..	..	..	..	..	4	..	..	..	..	..	1	..	..	29	..	..	1	..	..	..	1	..	..	1	2	..	53	65
66	..	50	14	..	2	..	..	..	1	10	7	..	11	..	5	..	3	1	221	6	..	..	..	4	..	4	..	..	..	1	..	429	66
67	..	7	1	..	1	..	..	11	..	6	12	..	6	..	..	11	..	7	..	15	6	..	..	12	..	5	..	..	..	26	..	189	67
68	..	15	3	..	1	..	..	3	..	9	6	..	4	..	1	7	..	1	7	30	8	..	..	2	1	4	..	..	..	1	..	203	68
69	..	2	10	..	2	..	..	1	4	27	..	..	20	..	1	..	..	1	3	226	..	..	..	2	1	1	1	2	17	2	376	69
70	..	5	3	..	..	..	..	1	..	2	1	..	1	4	5	1	..	..	..	..	3	300	..	..	..	..	1	..	..	9	..	359	70
71	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	42	..	..	1	..	1	..	1	1	60	71
72	..	..	..	..	..	..	4	5	..	36	..	..	1	1	..	1	1	..	..	..	..	..	..	69	..	..	..	..	..	5	3	173	72
73	..	..	2	..	..	..	..	5	..	4	6	..	2	..	..	1	..	8	..	1	..	..	..	..	172	2	21	..	..	2	..	246	73
74	1	2	..	1	..	..	..	8	..	22	28	..	4	..	..	14	..	1	..	1	..	1	..	..	135	..	62	2	..	4	..	332	74
75	1	..	1	..	..	..	..	..	..	19	..	..	6	..	..	15	1	..	..	..	1	..	..	..	..	94	..	..	..	3	..	141	75
76	4	..	1	1	..	..	1	1	..	9	2	2	2	..	..	2	1	..	3	..	1	..	..	..	2	..	236	..	..	9	..	317	76
77	13	..	3	..	..	..	1	5	..	31	..	..	10	..	1	4	1	..	3	..	..	1	..	1	2	..	172	..	2	18	1	312	77
78	2	..	..	1	2	..	..	..	..	1	..	1	..	..	1	..	..	..	..	1	..	..	..	..	1	..	..	..	..	14	169	197	78
79	1	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	..	..	..	..	13	185	202	79
80	..	..	..	..	..	..	..	5	..	41	..	..	1	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	98	151	80
81	..	..	..	..	..	..	1	2	..	10	..	..	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	..	24	265	310	81
82	..	..	..	..	..	..	..	2	..	19	..	..	3	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	8	192	229	82
83	..	..	2	..	..	..	..	1	..	9	..	..	2	1	1	2	..	..	..	..	..	..	..	..	..	..	..	..	..	56	729	816	83
84	3	..	3	2	2	5	20	4	..	49	1	..	4	1	1	13	2	1	..	..	3	1	3	..	16	..	7	..	..	38	225	504	84
85	..	..	1	..	..	..	1	..	..	3	..	..	..	..	..	..	3	..	..	..	..	..	..	..	..	..	..	..	..	1	169	184	85
86	..	..	..	..	..	..	3	..	..	6	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	236	246	86
87	..	..	1	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	6	43	52	87
	586	217	583	85	372	22	102	860	32	3478	371	132	1231	274	216	2207	146	208	112	363	734	156	99	450	257	322	606	22	97	885	2,460	25,779	

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order, but who lack credits in not more than two of the required subjects, may be admitted on passing examinations in these subjects.

(*b*) Candidates who have completed three years of collegiate instruction and present evidence of having accomplished work of distinction in one or more fields of learning, but who lack credits in any or all of the required subjects, may be admitted on passing examinations in these subjects.

Forty medical schools in the United States have adopted requirements in excess of this minimum; i. e., four require a degree, thirty-two require three years, one requires four years, and three admit students with three years of college work if the baccalaureate degree is conferred in absentia at the end of the first year in medicine. The medical schools of Canada vary with regard to the premedical requirement. One requires a degree, three have a two year requirement, one requires one year, one requires three years, and four schools have a six year medical course including premedical subjects.

For the guidance of prospective medical students and admitting officers, the Council publishes annually a compilation of college of arts and sciences approved by the following agencies:

Association of American Universities.
Middle States Association of Colleges and Secondary Schools.
New England Association of Colleges and Secondary Schools.
North Central Association of Colleges and Secondary Schools.
Northwest Association of Secondary and Higher Schools.
Southern Association of Colleges and Secondary Schools.

The Association of American Medical Colleges endorses the lists of evaluating agencies included in the Council's publication but in addition recognizes also the colleges approved by a state university.

College grades serve as a basis for selection in almost all medical schools. Candidates with an average grade of C or lower are regarded as poor risks. The medical aptitude test conducted by the Association of American Medical Colleges is another useful criterion in the appraisal of applicants. Many schools also require a personal interview.

The preliminary requirement of each school will be found in table 1. No attempt has been made to outline the admission requirements, since they vary considerably.

The two year premedical requirement has been in effect since 1918—seventeen years. However, there are eight states which have not adopted this standard as a legal requirement for licensure. Six of these states will not admit to licensure other than graduates of recognized medical schools which enact this requisite. The statutes of these states should be amended to conform.

LENGTH OF MEDICAL COURSE

The medical curriculum in the United States in general is taught in four years of thirty-two weeks each. The medical schools of the universities of Minnesota, Duke and Tennessee operate on the quarter plan, permitting the student by utilizing the summer months to complete the course in three calendar years. The two medical schools of the University of Chicago operate on the individualized plan of instruction whereby a student progresses as rapidly as his ability permits. Fourteen medical schools in the United States require a year of internship or research as a part of the medical course, thereby lengthening the course to five years. Duke University requires a two year internship. Ten schools offer only the work of the first two years.

Five of the medical schools of Canada offer a five year course; four have a six year course including premedical subjects, and the University of Saskatchewan offers only the first two years of the medical course. These data are included in table 1. Three of the Canadian schools have an internship requirement.

CURRICULUM

The Council recognizes as the standard curriculum that provided in the By-Laws [2] of the Association of American Medical Colleges, which is as follows:

SEC. 3. Curriculum. The entire course of four years shall consist of from 3,600 to 4,400 hours, distributed as from 900 to 1,100 hours per year, and shall be grouped as set forth in the following schedule, each group to be allotted approximately the percentage of hours of the whole number of hours in the courses as stated.

	Hours	Per Cent
1. Anatomy, including embryology and histology	14	18.5
2. Physiology	4.5	6
3. Biochemistry	3.5	4.5
4. Pathology, bacteriology and immunology	10	13
5. Pharmacology	4	5
6. Hygiene and sanitation	3	4
7. General medicine	20	26.5
Neurology and psychiatry		
Pediatrics		
Dermatology and syphilis		
8. General surgery	13	17.5
Orthopedic surgery		
Urology		
Ophthalmology		
Otolaryngology		
Roentgenology		
9. Obstetrics and gynecology	4	5
Total	76	100
Electives	24	0

When the teaching conditions demand it, a subject may be transferred from one division to another.

STATISTICS OF MEDICAL SCHOOLS

Table 1, pages 678 and 679, lists the medical schools in the United States and Canada recognized by the Council on Medical Education and Hospitals of the American Medical Association during 1934-1935 and contains figures regarding the premedical requirement by years for the session 1935-1936, length of the medical course by years, enrolment by classes for the session 1934-1935, including fifth year students interning or engaged in research, number of graduates since July 1, 1934, dates of the beginning and ending of the forthcoming session, and the month until which applications for admission to the freshman class are received. Changes in the classifications that have taken place since the publication of the educational statistics in 1934 [4] can be noted in the footnotes at the bottom of the table and refer to those schools which are marked by asterisks preceding the name. Also contained in the footnotes are references to the fifth and sixth year enrolments and those schools which admit students at varying times during the year.

The data presented in this table constitute the basis also for several of the subsequent tabulations. Beginning on page 692 are given historical information and essential facts concerning the schools arranged by states.

Seventy-seven institutions in the United States and ten in Canada are listed. With the exception of three, all these schools at the present time enjoy full approval by the Council. In eighty-four schools there were 6,989 freshman students enrolled, 6,200 sophomores, 5,698 juniors, 5,438 seniors, 373 fifth year and 220 sixth year students, during the session just ended. The students enrolled in the two medical schools of the Uni-

4. J. A. M. A. **103**: 567 (Aug. 25) 1934.

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versity of Chicago and Duke University are not classified by years. In these three schools there were 861 students enrolled, making a total of 25,779 in the eighty-seven schools listed. In the United States alone there were 6,356 freshmen, 5,624 sophomores, 5,142 juniors and 4,905 seniors and the 861 students mentioned above, a total of 22,888. The enrolment in Canada was as follows: first year, 633; second year, 576; third year, 556; fourth year, 533; fifth year, 373, and sixth year, 220, a total of 2,891. The 25,779 students enrolled do not include 1,347 students interning as a requirement for the degree. Since July 1, 1934, 5,101 received M.D degrees from schools in the United States and 457 from Canadian institutions. In addition, there were enrolled 133 part-time, 244 special and 718 graduate students. Nine schools had an enrolment of less than 100, fifteen less than 200, twenty-three less than 300, seventeen less than 400, thirteen less than 500, eight less than 600, and two schools had an enrolment of more than 600. The smallest enrolment was at Dartmouth Medical School (thirty-nine), which offers only a two year course; the highest enrolment was at the University of Toronto Faculty of Medicine (816), which has a six year course including premedical subjects. The lowest enrolment among four year colleges was 112 at Albany Medical College and the highest 614 at the University of Illinois College of Medicine. Louisiana State University Medical Center had the lowest number of graduates (nineteen) and Rush Medical College had the highest (152).

TABLE 3.—*Students Classified by Birthplace*

State	Number of Schools	Attending School in State of Birth	Birthplace Elsewhere
Alabama	1	48	82
Arkansas	1	126	104
California	4	441	568
Colorado	1	133	72
Connecticut	1	42	165
District of Columbia	3	90	858
Georgia	2	249	117
Illinois	5	1,193	1,116
Indiana	1	363	85
Iowa	1	344	10
Kansas	1	175	112
Kentucky	1	166	174
Louisiana	2	326	446
Maryland	2	244	469
Massachusetts	3	697	653
Michigan	2	370	422
Minnesota	1	457	65
Mississippi	1	47	5
Missouri	3	326	625
Nebraska	2	294	349
New Hampshire	1	7	22
New York	9	1,881	824
North Carolina	3	154	193
North Dakota	1	51	19
Ohio	3	644	294
Oklahoma	1	152	84
Oregon	1	164	70
Pennsylvania	6	1,545	884
South Carolina	1	131	31
South Dakota	1	29	24
Tennessee	3	286	535
Texas	2	526	209
Utah	1	42	18
Vermont	1	69	104
Virginia	2	327	251
West Virginia	1	94	47
Wisconsin	2	408	221
Canada	10	2,311	580
Totals	87	14,842	10,937

BIRTHPLACE OF STUDENTS

Table 2, pages 680 and 681, shows the birthplace of students in attendance at each medical school during the past session. The state furnishing the greatest number of students was New York, 3,478, followed by Pennsylvania with 2,207, Illinois with 1,549 and Ohio with 1,231. From the twelve states that do not have medical schools there were enrolled as students the following:

Arizona	40	New Jersey	860
Delaware	45	New Mexico	32
Florida	119	Rhode Island	146
Idaho	74	Washington	257
Maine	115	Wyoming	22
Montana	85		
Nevada	22		1,817

There were ninety-seven born in the United States possessions and 885 in foreign countries. In addition, 2,400 Canadians were also studying medicine, the majority enrolled in the medical schools of Canada.

In table 3 the medical school enrolment is further classified by birthplace indicating that 14,842 are studying in the state of their birth and 10,937 elsewhere. This is particularly significant in Illinois, where, of the 2,309 students in five schools, 1,116 were born outside the state. It may be that many of these have become residents of the state.

More than 800 born in New York are studying elsewhere. Altogether, 42 per cent are studying in schools located in states other than their birth. Eliminating the 1,817 born in states having no medical school, there are still 9,120 of the 25,779 studying outside their birth state.

A perusal of the table will show many instances in this classification wherein the number studying elsewhere far exceeds the number attending school in the state of birth. It also shows some states in which the contrary is the case, notably Indiana, Iowa and South Carolina.

TABLE 4.—*Schools, Students, and Graduates by States*

State	Schools	Students	Graduates
Alabama	1	130	..
Arkansas	1	230	42
California	4	1,039	216
Colorado	1	205	42
Connecticut	1	207	47
District of Columbia	3	948	239
Georgia	2	366	88
Illinois	5	2,309	573
Indiana	1	448	93
Iowa	1	354	62
Kansas	1	287	67
Kentucky	1	340	79
Louisiana	2	772	144
Maryland	2	713	174
Massachusetts	3	1,260	311
Michigan	2	782	179
Minnesota	1	502	123
Mississippi	1	52	...
Missouri	3	951	202
Nebraska	2	643	146
New Hampshire	1	39	...
New York	9	2,705	633
North Carolina	3	347	47
North Dakota	1	70	...
Ohio	3	938	227
Oklahoma	1	236	55
Oregon	1	234	54
Pennsylvania	6	2,429	575
South Carolina	1	162	41
South Dakota	1	53	...
Tennessee	3	821	190
Texas	2	735	161
Utah	1	60	...
Vermont	1	173	35
Virginia	2	578	130
West Virginia	1	141	...
Wisconsin	2	629	121
Totals	77	22,888	5,101

SCHOOLS, STUDENTS AND GRADUATES BY STATES

The number of schools, students and graduates for each state are given in table 4. New York, with the largest number of schools, nine, naturally had the largest number of students and graduates, 2,705 and 633 respectively. Pennsylvania with six schools had 2,429 students and 575 graduates. Illinois was third

with five schools, 2,309 students and 573 graduates. In four schools in California there were 1,039 students enrolled and 216 graduates, while in three schools in Massachusetts there were 1,260 students and 311 graduates. In the seventy-seven schools in the United States, including those that offer only the preclinical courses, there were 22,888 students and 5,101 graduates. Canada, with ten schools, had 2,891 students and 457 graduates.

REQUIRED INTERNSHIPS

In tables 5 and 6 are listed the state licensing boards and medical schools now requiring internships for licensure and the M.D. degree respectively. Some of these schools will accept research or other clinical work in lieu of the internship. There is also included the effective date of the requirement. Seventeen states, the District of Columbia and Alaska and fifteen schools in the United States and three in Canada are mentioned in these tables. During 1934-1935 there were 1,233 students of the United States and 114 in Canada reported as interns, a total of 1,347. Duke University School of Medicine grants the degree after the completion of the senior year, but all graduates are required to spend at least two years in hospital or laboratory work after graduation. While some of the licensing boards may have their own list of hospitals recommended for intern training, generally the Council's list of hospitals approved for internships is followed. A revised edition will be found beginning on page 699.

TABLE 5.—*Internship Required by Medical Licensing Boards*

Alaska	1917	Pennsylvania	1914
Delaware	1924	Rhode Island	1917
District of Columbia	1930	South Dakota	1925
Illinois	1923	Utah	1926
Iowa	1924	Vermont	1934
Michigan	1922	Washington	1919
New Jersey	1916	West Virginia	1932
North Dakota	1918	Wisconsin	1927
Oklahoma	1913	Wyoming	1931
Oregon	1933		

TABLE 6.—*Hospital Internship Required by Medical Schools*

United States	Effective Date
University of California Medical School	1919
College of Medical Evangelists	1927
University of Southern California School of Medicine	1933
Stanford University School of Medicine	1919
Loyola University School of Medicine	1922
Northwestern University Medical School	1920
University of Chicago, Rush Medical College	1919
University of Chicago, The School of Medicine of the Division of the Biological Sciences	1930
University of Illinois College of Medicine	1922
Louisiana State University Medical Center	1934
Wayne University College of Medicine	1924
University of Minnesota Medical School	1915
Duke University School of Medicine*	1932
University of Cincinnati College of Medicine	1926
Marquette University School of Medicine	1920
Canada	
University of Manitoba Faculty of Medicine	
Dalhousie University Faculty of Medicine	
University of Montreal Faculty of Medicine	

* Requires a two-year internship.

GRADUATES AND INTERNSHIPS

Table 7 contains figures regarding graduates from July 1, 1933, to July 1, 1934, who have served or are serving internships during the period July 1, 1934, to July 1, 1935. The figures for the graduates differs from that mentioned elsewhere in these statistics, since those who received M.D. degrees in 1934 on completion of a required internship that was served during July 1, 1933, to July 1, 1934, are omitted and also a few others. The second column, however, includes those serving internships as a requirement for the degree to show the total number of students interning. There were 1,347—1,233 U. S. students and 114 Canadian students—interning as a requirement for the degree, and 4,002 others. Altogether, 5,349 individuals have served or are serving internship during the period July 1, 1934, to July 1, 1935. With the exception of one in Canada, every school in the list has more than 90 per cent of its

TABLE 7.—*Graduates from July 1, 1933, to July 1, 1934, Who Have Obtained Internships During the Period July 1, 1934, to July 1, 1935*

School	Number of Graduates	Number Interning
University of Arkansas	50	47
University of California	*	53
College of Medical Evangelists	*	84
University of Southern California	*	35
Stanford University	*	46
University of Colorado	51	51
Yale University	40	40
Georgetown University	154	154
George Washington University	70	65
Howard University	47	47
Emory University	60	59
University of Georgia	39	38
Loyola University	*	100
Northwestern University	*	159
Rush Medical College	*	152
Division of the Biological Sciences	*	27
University of Illinois	*	140
Indiana University	114	108
State University of Iowa	72	71
University of Kansas	68	68
University of Louisville	94	85
Louisiana State University	*	20
Tulane University	122	122
Johns Hopkins University	73	68
University of Maryland	103	103
Boston University	53	52
Harvard University	132	131
Tufts College	101	97
University of Michigan	95	92
Wayne University	*	70
University of Minnesota	*	115
St. Louis University	108	106
Washington University	91	90
Creighton University	66	63
University of Nebraska	85	73
Albany Medical College	20	20
Long Island College of Medicine	111	98
University of Buffalo	63	63
Columbia University	99	98
Cornell University	56	54
New York Homeopathic Medical College	72	67
New York University	109	100
University of Rochester	46	45
Syracuse University	52	52
Duke University	34†	34
University of Cincinnati	*	73
Western Reserve University	53	53
Ohio State University	88	83
University of Oklahoma	61	58
University of Oregon	56	56
Hahnemann Medical College	95	95
Jefferson Medical College	143	143
Temple University	118	118
University of Pennsylvania	133	132
Woman's Medical College	19	18
University of Pittsburgh	65	65
Medical College of South Carolina	31	30
University of Tennessee	86	75
Meharry Medical College	38	38
Vanderbilt University	50	49
Baylor University	64	60
University of Texas	70	69
University of Vermont	33	33
University of Virginia	52	48
Medical College of Virginia	93	88
University of Wisconsin	49	49
Marquette University	*	66
University of Alberta	24	24
University of Manitoba	*	53
Dalhousie University	*	15
Queen's University	44	38
University of Western Ontario	24	23
University of Toronto	106	99
McGill University	80	79
University of Montreal	*	37
Laval University	43	20
Totals	4,268	5,349

* An internship or other acceptable clinical work is a requirement for graduation.
† Two year internship requirement after graduation.

graduates serving internships, and in twenty-one schools 100 per cent interned. Excluding those schools that require the internship for graduation, 94 per cent of

TABLE 8.—*Distribution by Sex*

	Students		Graduates	
	Men	Women	Men	Women
University of Alabama	128	2	..	..
University of Arkansas	221	9	42	..
University of California	200	39	44	7
College of Medical Evangelists	364	40	77	6
University of Southern California	167	9	34	1
Stanford University	209	11	42	5
University of Colorado	193	12	47	..
Yale University	187	20	42	5
Georgetown University	493	..	113	..
George Washington University	254	30	65	6
Howard University	164	7	53	2
Emory University	222	..	54	..
University of Georgia	142	2	34	..
Loyola University	466	21	91	5
Northwestern University	542	15	141	5
Rush Medical College	506	6	145	7
Division of the Biological Sciences	302	37	31	3
University of Illinois	592	22	142	3
Indiana University	435	13	89	4
State University of Iowa	343	11	62	..
University of Kansas	270	17	65	2
University of Louisville	336	4	78	1
Louisiana State University	288	13	18	1
Tulane University	462	9	124	1
Johns Hopkins University	248	28	61	8
University of Maryland	426	11	104	1
Boston University	230	23	51	4
Harvard University	723	..	137	..
Tufts College	459	25	114	5
University of Michigan	442	30	100	5
Wayne University	300	10	72	2
University of Minnesota	482	30	116	7
University of Mississippi	50	2	..	..
University of Missouri	79	3	..	..
St. Louis University	518	..	110	..
Washington University	334	17	90	2
Creighton University	299	4	68	1
University of Nebraska	536	4	76	1
Dartmouth Medical School	39	..	..	..
Albany Medical College	107	5	28	..
Long Island College of Medicine	390	17	97	1
University of Buffalo	262	15	63	3
Columbia University	370	33	91	6
Cornell University	258	29	59	5
New York Homeopathic Medical College	311	17	63	..
New York University	505	28	122	4
University of Rochester	159	8	43	3
Syracuse University	187	4	44	1
University of North Carolina	68	6	..	..
Duke University	205	5	46	1
Wake Forest College	63	..	..	..
University of North Dakota	70	..	..	..
University of Cincinnati	277	11	69	4
Western Reserve University	266	11	68	3
Ohio State University	361	12	81	2
University of Oklahoma	222	14	51	4
University of Oregon	218	16	50	4
Hahnemann Medical College	488	..	102	..
Jefferson Medical College	557	..	142	..
Temple University	428	20	97	3
University of Pennsylvania	514	17	129	5
Woman's Medical College	....	132	..	32
University of Pittsburgh	253	10	63	2
Medical College of South Carolina	156	6	40	1
University of South Dakota	52	1	..	..
University of Tennessee	415	14	96	3
Meharry Medical College	184	5	40	..
Vanderbilt University	186	17	46	5
Baylor University	308	8	79	..
University of Texas	339	20	79	3
University of Utah	57	3	..	..
University of Vermont	167	6	34	1
University of Virginia	236	10	53	1
Medical College of Virginia	315	17	73	3
West Virginia University	136	5	..	..
University of Wisconsin	294	23	50	5
Marquette University	306	6	64	2
University of Alberta	188	9	28	1
University of Manitoba	186	16	39	5
Dalhousie University	147	4	22	..
Queen's University	310	..	48	..
University of Western Ontario	215	14	32	2
University of Toronto	761	55	100	10
McGill University	404	10	102	1
University of Montreal	182	2	35	..
Laval University	246	..	32	..
University of Saskatchewan	48	4	..	..
Totals	24,588	1,191	5,332	226

all graduates here listed have this added experience. It is a known fact that there is a scarcity of internships and it may be that of the 6 per cent who have not been reported as interning many have found it difficult to secure internships in approved hospitals.

DISTRIBUTION BY SEX

Students and graduates classified by sex are shown in table 8. There were seventy-five schools which had both men and women students in the United States and Canada, of which fifty-eight had women graduates. Altogether there were 24,588 men and 1,191 women students, and 5,332 men and 226 women graduates. There is one medical college for women, the Woman's Medical College of Pennsylvania, which had 132 students and thirty-two graduates, leaving 1,059 women students pursuing their medical education and 194 who completed the course in coeducational institutions.

During the past year there were 1,077 women studying medicine in the United States, fifty-seven more than last year. The percentage of women to all medical students this year is 4.7 as compared with 4.5 in 1933. There were 207 graduates, four fewer than last year. Of all the women matriculants, 132 students were in attendance at the one medical college for women, the Woman's Medical College of Pennsylvania, while 945 were matriculated in sixty-seven coeducational schools. From the Woman's Medical College, thirty-two were graduated, while 175 secured their degrees from coedu-

TABLE 9.—*Women in Medicine in the United States*

Year	Women Students	Percentage of All Students	Women Graduates	Percentage of All Graduates
1905	1,073	4.1	219	4.0
1910	907	4.0	116	2.6
1915	592	4.0	92	2.6
1920	818	5.8	122	4.0
1925	910	5.0	204	5.1
1926	935	5.0	212	5.4
1927	904	4.9	189	4.7
1928	929	4.5	207	4.9
1929	925	4.4	214	4.8
1930	955	4.4	204	4.5
1931	990	4.5	217	4.6
1932	955	4.3	208	4.2
1933	1,056	4.7	214	4.4
1934	1,020	4.5	211	4.2
1935	1,077	4.7	207	4.1

cational institutions. As shown in table 9, the number of women students has been rather constant since 1920, although in 1935 there were more than in any other year.

MEDICAL SCHOOLS, STUDENTS AND GRADUATES IN THE UNITED STATES, 1905-1935

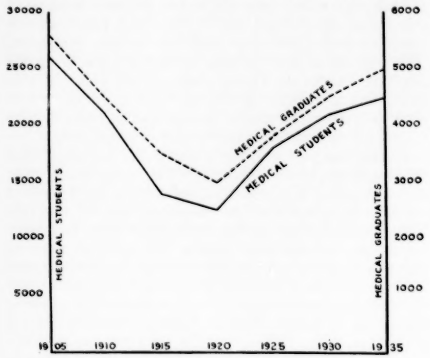
The number of medical schools, students and graduates in the United States for each five year period from 1905 to 1920, and for each year since, is shown in table 10. The total number of undergraduate medical students for the college session 1934-1935 was 22,888, an increase of eighty-nine over the previous session. This is the largest number of students enrolled since 1905, when 26,147 were in attendance at the 160 medical schools then existing. Also included are figures covering the number of students enrolled in schools offering only the preclinical courses. Not included in the total number of students for 1935 are 133 part time, 244 special and 718 graduate students majoring in the medical school but not working for M.D. degrees.

Again referring to table 10, it will be noted that the total number of graduates was 5,101, an increase of sixty-six over the preceding session. With the exception of the slight decrease in the number of graduates in 1933, as compared with previous years, there has been a steady increase since 1926. As will be noted, there were marked increases in 1923, 1924 and 1925. While

105
935

there was a decrease in the number of graduates in 1933, there was an increase in the number of students.

The number of students and graduates for each five year period since 1905 is shown graphically. In 1905



Number of medical students over thirty year period.

there were 26,147 students. The next fifteen years shows a decrease and since a noticeable increase. The Council has issued a general warning against the admission of larger classes than can properly be accommodated or than can reasonably be expected to satisfy approved scholastic standards. Seven schools have definitely stated that their enrolment will be decreased and others have indicated adherence to the Council's principles.

In this connection it is interesting to note the number enrolled in the various classes in the United States for each session from 1930-1931 to 1934-1935 inclusive, as shown in table 11. The total attendance for the first year for the session 1934-1935 was 6,356, or 101 fewer than the number enrolled for the session 1933-1934. The figure, however, is 100 more than were enrolled during 1930-1931. The total attendance for the remainder of the classes was, respectively, 5,624, 5,142, 4,905 and 1,233. The two medical schools of the University of Chicago are not operated under the promotion by class system but on an individual plan. It is not possible, therefore, to group them into the figures given.

TABLE 10.—*Schools, Students and Graduates in the United States*

Year	No. Schools	Students*	Graduates
1905	160	26,147	5,606
1910	131	21,526	4,440
1915	96	14,891	3,536
1920	85	13,798	3,047
1921	83	14,466	3,186
1922	81	15,635	2,520
1923	80	16,900	3,120
1924	79	17,728	3,502
1925	80	18,200	3,974
1926	79	18,840	3,962
1927	80	19,662	4,035
1928	80	20,545	4,202
1929	76	20,878	4,446
1930	76	21,597	4,565
1931	76	21,982	4,735
1932	76	22,135	4,936
1933	77	22,466	4,805
1934	77	22,799	5,035
1935	77	22,888	5,101

* Includes figures for schools offering preclinical courses also.

TABLE 11.—*Students in the United States Shown by Classes—1930-1935*

	1st Year	2d Year	3d Year	4th Year	5th Year‡	Total
1930-1931	6,456	5,538	5,080	4,908	1,025	23,007
1931-1932	6,260*	5,462*	4,932*	4,885*	1,067	23,202
1932-1933	6,426*	5,479*	5,017*	4,948*	1,106	23,572
1933-1934	6,457†	5,571†	4,988†	4,937†	1,183	23,382
1934-1935	6,356†	5,624†	5,142†	4,905†	1,233	24,121

* Enrolment for the two medical schools of the University of Chicago not included.
† Enrolment for the two medical schools of the University of Chicago and Duke University not included.
‡ Intern year.

TABLE 12.—*Negro Students and Graduates*

Name of School	Enrolment by Classes During 1934-1935: 1st Year	2d Year	3d Year	4th Year	Totals	Graduates
College of Medical Evangelists	2	2	..	2	6	1
Howard University College of Medicine	38	33	38	53	162	53
Loyola University School of Medicine	1	..	..	..	1	..
Rush Medical College	..	..	..	..	..	1
The School of Medicine of the Division of the Biological Sciences	..	1	2	..	3	..
University of Illinois College of Medicine	1	1	..	1	3	2
Indiana University School of Medicine	..	..	2	..	2	..
University of Kansas School of Medicine	..	1	..	..	1	..
Boston University School of Medicine	1	..	..	..	1	..
Tufts College Medical School	..	1	..	1	2	1
University of Michigan Medical School	..	1	..	..	1	..
Wayne University College of Medicine	1	..	..	..	1	1
University of Minnesota Medical School	..	1	..	..	1	..
Long Island College of Medicine	..	..	..	1	1	1
Columbia University Coll. of Phys. and Surgs.	..	..	1	..	1	..
New York Homeopathic Medical College and Flower Hospital	..	1	1	3	5	3
New York University College of Medicine	1	..	..	1	2	1
Syracuse University College of Medicine	..	1	..	..	1	..
University of Cincinnati College of Medicine	..	..	..	1	1	..
Western Reserve University School of Medicine	..	..	..	1	1	..
Ohio State University College of Medicine	2	2	1	..	5	..
Temple University School of Medicine	..	1	..	..	1	..
University of Pennsylvania School of Medicine	1	2	..	..	3	..
Woman's Medical College of Pennsylvania	1	..	..	..	1	..
Meharry Medical College	75	40	33	41	189	40
University of Vermont College of Medicine	1	..	..	..	1	..
McGill University Faculty of Medicine	..	1	2	2	5	..
University of Montreal Faculty of Medicine	..	1	..	..	1	..
	125	90	80	107	402	104
Totals during 1933-1934	111	105	108	100	424	100

TABLE 13.—*Fees, 1934-1935—United States and Canada**

	Schools
Under $100	3
$100 to $200	11
200 to 300	26
300 to 400	16
400 to 500	21
500 or over	10
Total	87

* Based on fees charged resident students.

This is likewise true of the enrolment at Duke University School of Medicine. They are, however, included in the totals. There were 210 students enrolled at Duke, 339 at the School of Medicine of the Division of the Biological Sciences of the University of Chicago and 312 at Rush Medical College, a total of 861. There were 1,114 more students enrolled than in 1930-1931. Only one new medical school has opened since that session, namely, the Louisiana State University Medical Center, which had an enrolment of 301 for the session of 1934-1935. Excluding the students of this university, there were 813 more students enrolled during the past college session than in the seventy-six medical schools that existed in 1931.

The Association of American Medical Colleges [5] reports that there were 32,321 applications for admission to the freshman class, representing 12,779 applicants, and of these 7,419 were accepted and 5,360 refused. However, as already indicated, only 6,356 actually enrolled for the freshman year, exclusive of the University of Chicago and Duke University enrolstudents and 104 graduates, a decrease of twenty-two students but an increase of four graduates over the figure for the previous year. Meharry Medical College was organized in 1876 as a medical college for Negro youth, and at Howard University College of Medicine, organized in 1869, they compose a majority of those in attendance. These two schools graduated

TABLE 14.—*Citizens of the United States Enrolled in Medical Faculties Abroad*

	Totals	Students, Academic Year, 1934-1935	
		Enrolled	Completed Course
Austria	**22**	**3**	
Karl-Franzens-Universität, Graz		12	3
Leopold-Franzens-Universität, Innsbruck		10	0
Belgium	**19**	**3**	
Université Libre de Bruxelles		11	1
Universiteit Gent		1	1
Université Catholique de Louvain		7	1
Brazil	**1**	**0**	
Faculdade de Medicina do Parana, Curitiba		1	0
China	**18**	**1**	
Peiping Union Medical College		3	0
Pennsylvania Medical School, Shanghai		15	1
Czechoslovakia	**10**	**0**	
Univerzita Komenského, Bratislava		1	0
Masarykova Universita, Brno		1	0
Deutsche Universität, Prague		4	0
Universita Karlova, Prague		4	0
Dominican Republic	**1**	**0**	
Universidad de Santo Domingo		1	0
England	**69**	**21**	
University of Birmingham		3	0
University of Bristol		6	1
University of Cambridge		9	0
University of Durham, Newcastle-upon-Tyne		7	0
University of Liverpool		1	0
University of London			
Charing Cross Hospital Medical School		0	2
Guy's Hospital Medical School		2	2
King's College Hospital Medical School		11	2
London Hospital Medical College		1	0
London (Royal Free Hospital) School of Medicine for Women		1	0
St. Bartholomew's Hospital Medical College		15	4
St. George's Hospital Medical School		4	6
St. Mary's Hospital Medical School		0	6
Westminster Hospital Medical School		0	4
University of Oxford		1	0
University of Sheffield		8	0
France	**89**	**3**	
Université de Caen		1	0
Université de Lyon		4	0
Université d'Aix-Marseille		1	0
Université de Montpellier		13	0
Université de Nancy		1	0
Université de Paris		63	2
Ecole de Medecine de Reims		1	0
Université de Strasbourg		3	1
Université de Toulouse		1	0
Université de Poitiers, Tours		1	0
Germany	**246**	**25**	
Friedrich-Wilhelms-Universität, Berlin		62	13
Rheinische Friedrich-Wilhelms-Universität, Bonn		39	2
Medizinische Akademie, Düsseldorf		1	0
Friedrich-Alexanders-Universität, Erlangen		3	0
Albert-Ludwigs-Universität, Freiburg		13	1
Johann Wolfgang Goethe-Universität, Frankfurt-am-Main		14	0
Hessische Ludwigs-Universität, Giessen		3	0
Georg August-Universität, Göttingen		4	0
Vereinigten Friedrichs-Universität, Halle-Wittenberg		3	0
Universität Heidelberg		18	3
Universität Köln		6	1
Albertus-Universität, Königsberg		4	0
Universität Leipzig		33	1
Philipps-Universität, Marburg		3	0
Ludwig-Maximilians-Universität, München		22	2
Westfälische Wilhelms-Universität, Münster		3	0
Universität Rostock		4	2
Eberhard-Karls-Universität, Tübingen		4	0
Julius-Maximilians-Universität, Würzburg		7	0
Hungary	**20**	**0**	
Magyar Királyi Pazmány Petrus Tudományegyetem, Budapest		15	0
Magyar Királyi Ferencz József Tudományegyetem, Szeged		5	0
Ireland	**5**	**0**	
Queen's University, Belfast		1	0
National University of Ireland			
University College, Cork		1	0
University College, Dublin		1	0
University of Dublin School of Physic		2	0
Italy	**198**	**28**	
Regia Università di Bari		8	0
Regia Università di Cagliari		1	0
Regia Università di Firenze		3	0
Regia Università di Modena		2	0
Regia Università di Padova		10	4
Regia Università di Palermo		6	0
Regia Università di Pavia		3	0
Regia Università di Pisa		3	0
Regia Università di Roma		161	24
Regia Università di Sassari		1	0
Lithuania	**2**	**0**	
Vytauto Didžiojo Universiteto, Kaunas		2	0
Netherland India	**1**	**0**	
Geneeskundige Hoogeschool, Batavia		1	0
Philippine Islands	**7**	**0**	
Afable College of Medicine, Manila		3	0
University of the Philippines, Manila		1	0
University of Santo Tomas, Manila		3	0
Poland	**12**	**1**	
Uniwersytet Jagielloński, Cracow		2	0
Uniwersytet Jana Kazimierza, Lwów		2	0
Uniwersytet Warszawski		2	0
Uniwersytet Poznański		3	0
Uniwersytet Stefana Batorego, Wilno		3	1
Portugal	**1**	**0**	
Universidade do Porto		1	0
Scotland	**421**	**71**	
University of Aberdeen		10	8
School of Medicine of the Royal Colleges, Edinburgh		199	10
University of Edinburgh		34	8
Anderson College of Medicine, Glasgow		84	0
University of Glasgow		25	13
University of St. Andrews		69	32
Switzerland	**359**	**41**	
Universität Basel		83	0
Universität Bern		114	25
Université de Lausanne		40	13
Universität Zürich		72	3
Syria	**13**	**2**	
American University of Beirut		13	2
Yugoslavia	**7**	**0**	
Beogradskog Universiteta		7	0
Totals by countries	**1,471***	**199***	

* It is believed this figure should be larger inasmuch as the following schools previously reported large numbers of American students: Vienna, Austria; Bologna and Naples, Italy; St. Mungo's, Scotland, and Geneve, Switzerland.

ment. It may be noted that 700 students were accepted by medical schools who did not matriculate in a medical school in 1934-1935 principally because of multiple application.

NEGROES IN MEDICAL SCHOOLS

The Negro medical students for the session 1934-1935 are recorded by classes in table 12. The totals for 1933-1934 are shown for comparison. There were 402 the majority of the Negro students. All other schools enrolled less than seven.

TUITION FEES

In table 13, the eighty-seven medical colleges of the United States and Canada have been grouped according to the amount of fees charged. To arrive at the figures listed, an average was compiled of the fees for each school. Included in these fees are the various minor charges, such as for matriculation, breakage, diploma and graduation. Three colleges have fees of

5. J. A. Am. M. Coll. **10**: 202 (July) 1935.

less than $100 a year. These were the Louisiana State University, North Dakota and Oklahoma. They, however, charge an additional fee of $300, $90 and $200, respectively, for nonresidents. The ten colleges having fees over $500 are Yale, Johns Hopkins, Columbia, Cornell, Long Island, New York Homeopathic, Syracuse, New York University, Buffalo and Pennsylvania. There were thirty-two universities which made an additional charge for nonresidents, ranging from $50 by the Universities of Mississippi, Missouri, Cincinnati (nonresidents of Cincinnati), Tennessee and Virginia to $300 exacted by the Universities of California and Louisiana State.

The lowest nonresident fee was charged by the University of Utah, $35. No noticeable increase or decrease has been noted in the fees charged by medical schools. The fees are not listed in these statistics by individual schools other than in the descriptions beginning on page 692. Provision is made also for scholarships and loan funds for deserving students.

TABLE 15.—*Citizens of the United States Reported Enrolled in Medical Faculties Abroad—1930-1935*

	Students 1930-1931		Students 1931-1932		Students 1932-1933		Students 1933-1934		Students 1934-1935	
	Enrolled	Completed Course	Enrolled	Completed Course	Enrolled	Completed Course	Enrolled	Completed Course	Enrolled	Completed Course
Austria	114	3	175	6	271	3	272	4	22	3
Belgium	3	0	4	1	10	1	11	0	19	3
Brazil	..	..	..	..	..	..	2	1	1	0
China	..	..	..	..	12	0	15	0	18	1
Colombia	..	..	..	..	..	..	1	0	..	..
Czechoslovakia	2	0	4	0	19	0	2	0	10	0
Dominican Republic	..	..	..	..	..	..	..	..	1	0
England	52	2	61	4	57	1	69	4	69	21
Finland	1	0	..	..	..	..	..	..	..	..
France	25	2	62	6	78	5	86	2	89	3
Germany	72	1	189	5	439	42	331	8	246	25
Greece	..	..	..	..	4	1	6	0	..	..
Hungary	9	1	15	2	13	1	25	1	20	0
Ireland	14	1	21	0	20	0	4	1	3	0
Italy	78	11	155	4	282	14	272	21	198	28
Japan	..	..	1	0	..	..	..	..	..	..
Lithuania	..	..	4	0	4	0	2	0	2	0
Mexico	1	0	1	1	..	..	..	..	..	..
Netherland India	..	..	..	..	1	0	1	0	1	0
Netherlands	..	..	..	..	..	..	1	0	..	..
Philippine Islands	..	..	..	..	2	0	2	0	7	0
Poland	2	0	3	0	9	0	14	4	12	1
Portugal	..	..	..	..	..	..	1	0	1	0
Scotland	236	19	286	25	416	9	474	48	421	71
South Africa, Union of	..	..	1	0	..	..	..	..	..	..
Switzerland	65	4	214	1	405	10	351	8	309	41
Syria	16	2	8	0	7	0	11	2	13	2
Yugoslavia	..	..	2	1	5	1	7	0	7	0
Totals	710	46	1,206	56	2,054	88	1,940	104	1,471	199

CITIZENS OF THE UNITED STATES ENROLLED IN MEDICAL FACULTIES ABROAD

A study of the number of citizens of the United States enrolled in medical faculties abroad will be found in table 14. This tabulation covers the academic year 1934-1935. There were 1,471 students and 199 graduates or those who completed their medical training in the ninety-seven institutions reporting. This study has been carried on since 1931, when it became evident that great numbers of Americans were going to Europe to study. The files of the Association of American Medical Colleges shows that the application record of 502 students whose names were supplied this year indicates that 106 have made application to medical schools in the United States without success since 1931. There were as many as twenty-five rejections by medical schools in individual cases, indicating their inability to obtain a medical education in this country. In view of the problem created by this migration, the Federation of State Medical Boards of the United States in February 1933 adopted a resolution to the effect that no student matriculating in a European medical school subsequent to the academic year of 1932-1933 will be admitted to any state medical licensing examination who does not present satisfactory evidence of premedical education equivalent to the requirements of the Association of American Medical Colleges and the Council on Medical Education and Hospitals, and graduation from a European medical school after four academic years of attendance, and further submits evidence of having satisfactorily passed the examination to obtain a license to practice medicine in the country in which the medical school from which he is graduated is located.

This policy of the federation has been made effective by individual action on the part of the state licensing bodies and the National Board of Medical Examiners and will have its desired effect in the future.

For the purpose of keeping closely in touch with developments in other countries, a joint committee was appointed representing the Council on Medical Education and Hospitals, the Federation of State Medical Boards of the United States, the New York Board of Regents, the National Board of Medical Examiners, and the Association of American Medical Colleges.

Further, in 1934 the Federation of State Medical Boards passed a resolution to the effect that the federation recommend to its constituent state boards and to the National Board of Medical Examiners that, until adequate information is available, these boards deny graduates of foreign medical schools admission to the various medical licensure examinations.

The governments of many European countries have already taken cognizance of the situation and sent representatives to this country to discuss appropriate measures for dealing with students from the United States. In some universities, entrance requirements have been raised; in some, student enrolment has been limited. In all cases, credentials will be carefully scrutinized.

The enrolment of these students in foreign faculties as reported to us for each session since 1930-1931 is shown in table 15. The largest numbers were enrolled in Austria, Germany, Italy, Scotland and Switzerland. Those enrolled in 1930-1931 (710), if still studying abroad, will probably finish their course during this year or next and it may be expected that most of them plan to return to the United States to practice.

GRADUATE MEDICAL EDUCATION

Table 16 contains information regarding opportunities for graduate medical education by universities in the United States and Canada elicited from an inquiry as to whether (1) definitely organized courses for graduates were being offered; (2) graduate training was being conducted in an informal way, i. e., by residencies, fellowships, etc.; (3) students enrolled primarily in the graduate school are permitted to do part of their work under the direction of the medical faculty, and (4) the institution engages in extension teaching in the field of medicine. Twenty-nine schools report that they have organized courses and two universities have graduate schools of medicine. Fifty-three offer residencies or fellowships. Courses in the graduate school under the direction of the medical faculty are reported by

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TABLE 16.—*Opportunities for Graduate Medical Education by Universities in the United States and Canada**

Medical Schools	Type of Instruction Offered			
		Graduate School Students		
	Organized Courses	Residencies, Fellowships, Etc.	Under Direction of Medical School Faculty	Extension Teaching
University of Alabama	Chemistry	Fellowship in basic sciences	+	0
University of Arkansas	0	..	..	0
University of California	0	+	..	0
College of Medical Evangelists	0	0	..	0
University of Southern California	+	+	+	+
Stanford University	0	+	+	+
University of Colorado	+	+	+	0
Yale University	+	+	+	..
Georgetown University	0	Fellowships	..	..
George Washington University	+	Fellowships	+	0
Howard University	0	..	+	0
Emory University	0	..	..	+
University of Georgia	+	+	+	+
Loyola University	+	Fellowships	+	0
Northwestern University	0	+	+	0
Rush Medical College	Otolaryngology, ophthalmology and radiology	..	..	0
Division of the Biological Sciences	0	+	+	0
University of Illinois	+	+	+	0
Indiana University	..	..	..	..
State University of Iowa	+	+	+	+
University of Kansas	0	+	+	+
University of Louisville	0	..	..	0
Louisiana State University	0	..	+	+
Tulane University	+	+	+	0
Johns Hopkins University	0	+	+	0
University of Maryland	0	Fellowships	+	+
Boston University	0	+	+	0
Harvard Medical School	+	+	+	0
Tufts College	0	+	+	0
University of Michigan	+	+	+	0
Wayne University College of Medicine	+	0	+	0
University of Minnesota	Graduate school of medicine	+	+	0
University of Mississippi	..	..	+	0
University of Missouri	0	..	+	0
St. Louis University	+	+	+	0
Washington University	+	+	+	0
Creighton University	0	0	+	0
University of Nebraska	+	+	+	0
Dartmouth Medical School	+	Fellowships	+	0
Albany Medical College	0	+	..	+
Long Island College of Medicine	+	+	+	0
University of Buffalo	0	..	..	+
Columbia University	+	+	+	+
Cornell University	0	Residencies	0	0
New York University	+	Partially	+	0
New York Homeopathic Medical College	+	0	+	0
University of Rochester	Ophthalmology	+	..	+
Syracuse University	0	+	+	0
University of North Carolina	+	0	+	0
Duke University	0	+	0	0
Wake Forest College	0	..	..	0
University of North Dakota	0	+	+	0
University of Cincinnati	0	+	+	0
Western Reserve University	0	+	+	0
Ohio State University	0	+	+	+
University of Oklahoma	0	..	+	0
University of Oregon	0	+	+	0
Hahnemann Medical College	0	..	..	0
Jefferson Medical College	0	+	..	0
Temple University	+	Residencies	+	+
University of Pennsylvania	Graduate school of medicine	Dermatology and roentgenology. Fellows registered in graduate school of medicine	Faculties interlocking to a certain extent	Graduate school of medicine
Woman's Medical College	0	+	+	0
University of Pittsburgh	0	0	0	0
Medical College of South Carolina	0	0	0	0
University of South Dakota	..	..	..	0
University of Tennessee	0	+	+	0
Meharry Medical College	0	..	..	0
Vanderbilt University	+	+	+	0
Baylor University	0	..	..	..
University of Texas	+	Residencies	+	0
University of Utah	0	..	..	0
University of Vermont	0	..	..	0
University of Virginia	0	+	+	+
Medical College of Virginia	0	Residencies	0	0
West Virginia University	..	..	..	0
University of Wisconsin	0	+	+	+
Marquette University	Basic medical sciences	0	+	0
University of Alberta	0	0	..	0
University of Manitoba	0	0	0	0
Dalhousie University	0	..	..	0
Queen's University	0	+	0	0
University of Western Ontario	+	+	+	+
University of Toronto	0	+	+	+
McGill University	0	+	+	0
University of Montreal	0	..	..	..
Laval University	0	..	..	0
University of Saskatchewan	+	0	+	+

* Institutions offering graduate medical courses other than universities are not included in this tabulation.
+, yes; .., no reply; 0, no.

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fifty-six schools and extension training by nineteen. Nineteen schools do not offer graduate work.

This table does not include institutions offering graduate medical courses other than universities, such as the New York Polyclinic and the New York Eye and Ear Infirmary. It therefore does not give a complete picture but will give the reader a fairly good idea of graduate instruction in the United States. The Universities of Southern California, Georgia, Iowa, Columbia, Pennsylvania and Western Ontario offer all four types of education.

NECROPSIES IN HOSPITALS APPROVED FOR INTERNSHIPS

While the performance of necropsies in hospitals is only one of many important functions, it is nevertheless a valuable index to the scientific interests of the staff

TABLE 17.—*Approved Internship Hospitals with Highest Necropsy Percentages, 1934*

	Control	Deaths	Necropsies	Necropsy Percentage
1. Research and Educational Hospital, Chicago	State	217	197	90.8
2. St. Joseph Hospital, Kansas City, Mo.	Church	239	216	90.4
3. Chas. T. Miller Hospital, St. Paul, Minn.	NPAssn	56	48	85.7
4. St. Luke's Hospital, Kansas City, Mo.	Church	146	125	85.6
5. Mary Hitchcock Memorial Hospital, Hanover, N. H.	NPAssn	99	80	80.8
6. Colorado General Hospital, Denver	State	204	162	79.4
7. Johns Hopkins Hospital, Baltimore	NPAssn	577	457	79.2
8. University of Nebraska Hospital, Omaha	State	138	108	78.3
9. Bell Memorial Hospital, Kansas City, Kan.	State	249	193	77.5
10. University of California Hospital, San Francisco	State	176	133	75.6
11. Peter Bent Brigham Hospital, Boston	NPAssn	294	220	74.8
12. University Hospitals, Minneapolis	State	422	312	73.9
13. St. Elizabeths Hospital, Washington, D. C.	Fed	276	200	72.5
14. Grasslands Hospital, Valhalla, N. Y.	County	453	327	72.2
15. Evanston Hospital, Evanston, Ill.	NPAssn	107	77	72.0
16. St. Margaret's Hospital, Kansas City, Kan.	Church	254	182	71.7
17. Santa Fe Coast Lines Hospital, Los Angeles	NPAssn	67	48	71.6
18. State of Wisconsin General Hospital, Madison	State	357	254	71.1
19. University of Chicago Clinics, Chicago	NPAssn	249	175	70.3
20. St. Mary's Hospital, Duluth, Minn.	Church	226	158	69.9

NPAssn, nonprofit association; Fed, federal.

and their efficiency in the training of interns. All of the 697 hospitals now approved for intern training met or exceeded the 15 per cent requirement. A few were removed during the year because of low necropsy rates and other deficiencies.

The names of twenty hospitals achieving the highest rate during the year 1934 are given in table 17. Of these, seven were operated by nonprofit associations, seven were state hospitals, four church hospitals, one federal and one county hospital. However, the total results were as follows:

1934 Necropsy Averages

No. of Hospitals	Control	Average Percentage
36	Federal and state	59.1
87	City and county	35.1
270	Church	27.9
273	Nonprofit associations	33.8
26	Profit associations	28.4
5	Fraternal, individual, industrial, and partnership	29.

The progress made between 1926 and 1934 is shown in the following figures:

Necropsy Rate	Number of Hospitals 1926	1934
15 per cent to 29 per cent	146	371
30 per cent to 49 per cent	68	239
50 per cent to 69 per cent	21	59
70 per cent and above	14	28

The rate of necropsy performance achieved by each of the 697 hospitals now approved for internship is given among other data in the revised list of approved hospitals beginning on page 699.

ESSENTIALS OF AN ACCEPTABLE SCHOOL OF OCCUPATIONAL THERAPY

I. ORGANIZATION

1. A school of occupational therapy should be incorporated under the laws regulating associations which are operated not for profit. The control should be vested in a board of trustees rather than an individual. This board should be composed of public spirited men or women receiving no financial benefits from the operations of the schools. The trustees should serve for fairly long and overlapping terms. If the choice of trustees is vested in any other body than the board itself, this fact should be clearly stated. Officers and faculty of the school should be appointed by the board.

2. Affiliation with a college, university or medical school is highly desirable but is not an absolute requirement.

3. Schools of occupational therapy should not be operated by hospitals independently. It is understood, however, that hospitals are needed for practice training and especially for graduate training in the special branches of occupational therapy.

II. FACULTY

1. The school should have a competent teaching staff, graded and organized by departments. Appointments should be based on thorough education and training and successful teaching experience. Nominations for faculty positions should be made in accordance with academic custom. The staff should include not less than one regular salaried instructor and one registered occupational therapist. The question of full time and part time appointments is not as important as the qualifications of the instructors, who should be specialists or exceptionally well trained and well qualified in the lines they are teaching.

III. PLANT

1. The school should own, or enjoy the use of, buildings sufficient in size to provide adequate lecture rooms, class laboratories and administration offices. Equipment should be adequate for teaching and training. Anatomic charts, manikins and dummies should also be provided. There should be a library receiving regularly all the leading periodicals pertaining to occupational therapy, current numbers of which should be easily accessible to the students.

IV. ADMINISTRATION

1. *Supervision.*—There should be careful and intelligent supervision of the entire school by the dean, director or other executive officer, who, by training and experience, is fitted to interpret the prevailing standards and who is clothed with sufficient authority to carry them into effect.

2. *Records.*—There should be a good system of records showing conveniently and in detail the credentials, attendance, grades and accounts of the students, by means of which an exact knowledge can be obtained regarding each student's work. Schools should require that students be in actual attendance within the first week of each annual session and thereafter. Except for good cause, no credit should be given for any course when attendance has been less than 80 per cent.

3. *Credentials.*—The admission of students to the occupational therapy school must be in the hands of a responsible committee or examiner, whose records shall always be open for inspection. Documentary evidence of the student's preliminary education should be obtained and kept on file. When the occupational therapy school is an integral part of the university, this work usually devolves on the examiner or registrar.

4. *Advanced Standing.*—At the discretion of the administration, advanced standing may be granted for work required in the occupational therapy curriculum which has been done in other accredited institutions. Official verification of previous work should be obtained by direct correspondence. Preliminary qualifications should also be verified and recorded.

5. *Number of Students.*—The number of students admitted to the training course should not be excessive. In practical work of a laboratory nature the number of students that can be adequately supervised by a single instructor is, in general experience, about fifteen; in lectures the number may be much larger. A close personal contact between students and members of the teaching staff is essential.

6. *Discipline.*—All training schools reserve the right to drop a student at any time for any cause which the school authorities deem sufficient.

7. *Publications.*—The school should issue, at least biennially, a bulletin setting forth the character of the work which it offers. Such an announcement should contain a list of the members of the faculty with their respective qualifications.

V. Prerequisites for Admission

Requirements for admission shall be:

1. *Age.*—The admission of candidates should be governed by the fact that it is required that each student be not less than 21 years old at graduation.

2. *Education.*—All candidates must furnish proof of having completed a high school education or its equivalent. In addition, it is desirable that all candidates, except those for the degree course, shall have had at least one year, and preferably two years, of further education or successful experience in college, art school, social service, nurse's training or the commercial field.

Candidates for admission to a training course in a college or university which is combined with work leading to a bachelor's degree should be required to comply with the regular entrance requirements of the institution concerned.

3. *Character.*—All candidates should be required to present evidence of good character and general fitness, the evidence of which should be investigated and duly weighed by the school concerned.

4. *Health.*—All students should be given a physical examination under the supervision of the school as soon as practicable after admission, and this examination should be repeated annually. The first examination, at least, should include a roentgen examination of the chest.

VI. Curriculum

1. *Length of Course.*—The minimum length of the course should be twenty-five calendar months (100 weeks) of full time training. The course should include not less than sixteen months (sixty-four weeks) of theoretical and technical work, and not less than nine months (thirty-six weeks) hospital practice-training under competent supervision; all as set forth in detail in succeeding sections.

2. *Distribution of Time.*—The two years devoted to theoretical training should include not less than sixty semester hours, of which not less than thirty semester hours should consist of systematic instruction and not less than twenty-five hours of laboratory procedures. In special cases a variation of 10 per cent is permissible.

3. The hours devoted to theoretical training should be still further subdivided as follows:

	Semester Hours
(*a*) Biologic Sciences include: Anatomy, Physiology, Neurology, Kinesiology, Psychology, Psychiatry	15
(*b*) Social Sciences	4
(*c*) Theory of Occupational Therapy	4
(*d*) Clinical Subjects include: Orthopedics, Tuberculosis, Cardiac Diseases, Blindness and Deafness, Contagious Diseases (including Bacteriology if this subject is not given elsewhere), General Medical and Surgical Conditions	4
(*e*) Electives	3
Total	30

4. Practical work in the various occupations should be allotted not less than twenty-five semester hours. The following subjects should be covered:

Design	Leather
Textiles	Plastic Arts
Wood	Recreation
Metal	Miscellaneous

5. The curriculum outlined above should be in effect not later than Jan. 1, 1939.

ESSENTIALS FOR THE LISTING OF PHYSICIANS SPECIALIZING IN PATHOLOGY AND CLINICAL PATHOLOGY

Admission to the list is open to all physician-pathologists engaged in pathologic work in accordance with the "Essentials," whether connected with a hospital or not. The work of compiling a list of qualified pathologists according to these "Essentials" is done by the Council on Medical Education and Hospitals of the American Medical Association, 535 North Dearborn Street, Chicago.

Definition.—A physician holding himself out as a specialist in pathology may be defined as follows: One who is a graduate in medicine having had satisfactory training and experience in pathology, chemistry, bacteriology, or other allied subjects for at least three years subsequent to graduation, who is in good standing and has been duly licensed to practice medicine.

Qualifications.—(*a*) The pathologist shall be on a full or part time basis with a laboratory for the practical application of one or more of the fundamental sciences by the use of specialized apparatus, equipment and methods, for the purpose of ascertaining the presence, nature, source and progress of disease in the human body. He should devote the major part of his time to work in this field. (*b*) Pathology should be practiced on the same scientific and ethical basis, whether in the hospital or in a detached laboratory. The work represents the practice of medicine as in other specialties. The pathologist may make diagnoses only when he is a licensed graduate of medicine, has had satisfactory training and experience in pathology for at least three years subsequent to graduation from a medical college, is reasonably familiar with the manifestations of disease, and is competent to make reliable reports.

(*c*) *Assistants:* The pathologist may have a corps of qualified assistants and technicians, responsible to him, and for whom he is responsible, to carry out promptly, intelligently and accurately the several kinds of service the laboratory offers. All their reports, not only of tissues but also of all bacteriologic, hematologic, biochemical, serologic and pathologic data, should be made to the pathologist.

Scope.—Pathologic service may consist of:

(*a*) Hematologic: Blood counts, blood groupings and coagulation tests, and tests for blood parasites in general.

(*b*) Biochemical: Qualitative and quantitative analyses of urine, blood, gastric contents, body fluids, feces, intestinal contents and cerebrospinal fluids; renal and hepatic function tests and basal metabolism.

(*c*) Bacteriologic: Bacteriologic diagnoses; preparation of vaccines and blood and body fluid cultures.

(*d*) Serologic: Serologic diagnoses; agglutination, complement fixation, or precipitin and lysis tests.

(*e*) Pathologic: Preparation of paraffin, celloidin or frozen sections, microscopic and gross pathologic specimens and necropsies.

(*f*) Parasitologic: Protozoal and zoological diagnoses.

(*g*) Metabolic: Disorders of metabolism.

(*h*) Cardiologic: Disorders of the heart.

It is of course not required that the candidate shall be prepared to render all the services mentioned, since the work must necessarily be diversified in larger laboratories and in smaller laboratories it is not always practical to have equipment and setups that would be used only occasionally. Since many pathologists limit their work to one branch of the specialty, referring certain items, far more efficiency is to be expected.

Reports.—Reports should be made solely to the physician in charge of the patient and should be signed by the pathologist. All blanks and reports should have the name of the director printed on them and, if of a diagnostic or prognostic character, the name of the staff physician also.

Records.—Full records of all examinations made by the pathologist, suitably indexed and filed, are essential. Every specimen analyzed in the laboratory should be given a serial number, which should follow that specimen in the records and reports. When the laboratory report concerns a hospital patient, an exact transcript of the laboratory record should be appended to the hospital case record. Each specimen submitted to the laboratory should be accompanied by pertinent clinical data.

Advertising matter should be directed only to physicians either through bulletins or through recognized technical journals, and never to the nonprofessional public, as, for example, by announcements in popular journals and periodicals, circulars, pamphlets, telephone lists or other means.

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DESCRIPTION OF MEDICAL COLLEGES

ALABAMA

University

UNIVERSITY OF ALABAMA SCHOOL OF MEDICINE.—Organized in 1859 at Mobile as the Medical College of Alabama. Classes graduated in 1861 and subsequent years excepting 1862 to 1868, inclusive. Reorganized in 1897 as the medical department of the University of Alabama. Present title assumed in 1907, when all property was transferred to the University of Alabama. In 1920 clinical teaching was suspended and the medical school was removed to the university campus near Tuscaloosa. Coeducational since 1920. Minimum entrance requirements are ninety semester hours of collegiate work. The course of study covers two years of thirty-six weeks each. The faculty includes 13 professors and 10 instructors, assistants, etc, a total of 23. The tuition fees are $271 each year. Total registration for 1934-1935 was 130. The next session begins Sept. 12, 1935, and ends May 26, 1936. The Dean is Stuart Graves, M.D.

ARKANSAS

Little Rock

UNIVERSITY OF ARKANSAS SCHOOL OF MEDICINE, 300 West Markham Street.—Organized in 1879 as the Medical Department of Arkansas Industrial University. Present title in 1899. In 1911 the College of Physicians and Surgeons united with it and it became an integral part of the University of Arkansas. The first class was graduated in 1880. Clinical teaching was suspended in 1918 but resumed in 1923. Coeducational since organization. The faculty consists of 34 professors and 65 lecturers and assistants, total 99. The curriculum covers four years of nine months each. Entrance requirements are two years of collegiate work. The B.S. degree in medicine is conferred at the end of the second year. The fees for the four years for residents of Arkansas are $200; nonresidents are charged $150 additional each year. The total registration for 1934-1935 was 230; graduates, 42. The next session begins Oct. 2, 1935, and ends June 8, 1936. The Dean is Frank Vinsonhaler, M.D.

CALIFORNIA

Berkeley-San Francisco

UNIVERSITY OF CALIFORNIA MEDICAL SCHOOL, University Campus, Berkeley; Medical Center, San Francisco.—Organized in 1862 as the Toland Medical College. The first class graduated in 1864. In 1872 it became the Medical Department of the University of California. In 1909, by legislative enactment, the College of Medicine of the University of Southern California, at Los Angeles, became a clinical department but was changed to a graduate school in 1914. In 1915 the Hahnemann Medical College of the Pacific was merged, and elective chairs in homeopathic materia medica, and therapeutics were provided. Coeducational since organization. Three years of collegiate work is required for admission. The work of the first year is given at Berkeley and that of the last three years at San Francisco. The faculty is composed of 138 professors and 243 associates and assistants, a total of 381. The course covers four years of eight months each, and an additional fifth year consisting of an internship in a hospital or of special work in a department of the medical school. Fees for the four years, respectively, for residents of California are $277, $240, $235 and $235; nonresidents are charged $300 additional each year. Total registration for 1934-1935 was 239; graduates, 51. The next session begins Aug. 26, 1935, and ends May 22, 1936. The Dean is Langley Porter, M.D., San Francisco.

Loma Linda-Los Angeles

COLLEGE OF MEDICAL EVANGELISTS.—Organized in 1909. The first class graduated in 1914. The laboratory departments are at Loma Linda, the clinical departments at Los Angeles. Coeducational since organization. The faculty is composed of 59 professors and 237 associates, assistants and instructors, a total of 296. The course covers a period of five years, including one year of internship. During the first and second years, the students are in school twelve months each year. This is accomplished by means of the "cooperative plan," the student spending alternate months in an approved hospital in practical lines of medical training. Sixty-four semester hours of collegiate work are required for admission. The total fees for the four years, respectively, are $385, $375, $480 and $440. The total registration for 1934-1935 was 404; graduates, 83. The next session begins July 2, 1935 and ends June 21, 1936. The Dean of the Los Angeles Division is E. H. Risley, M.D., and the Dean of the Loma Linda Division is W. E. Macpherson, M.D.

Los Angeles

UNIVERSITY OF SOUTHERN CALIFORNIA SCHOOL OF MEDICINE, 3551 University Avenue.—Organized in 1885 as the University of Southern California College of Medicine. First class graduated in 1888. In 1908 it became the Medical Department of the University of California in Los Angeles. In 1909 the College of Physicians and Surgeons, established in 1904, became the Medical Department of the University of Southern California. Its activities were suspended in 1920; reorganized in May 1928, under present title. The faculty consists of 132 professors and 126 instructors, assistants and others, a total of 258. An internship is required for graduation. Three years of collegiate work is required for admission. Coeducational since organization. Annual fees amount to $450. The total registration for 1934-1935 was 176; graduates, 35. The next session begins Sept. 23, 1935, and ends June 6, 1936. The Dean is Paul S. McKibben, Ph.D.

San Francisco

STANFORD UNIVERSITY SCHOOL OF MEDICINE, 2398 Sacramento Street, San Francisco.—Organized in 1908, when, by agreement, the interests of Cooper Medical College were taken over. The first class graduated in 1913. Coeducational since organization. The faculty consists of 109 professors and 156 lecturers, assistants and others, a total of 265. Three years of collegiate work is required for admission. The course covers four years of eight and one-half months each, plus a fifth year of intern work. The fees for the four years, respectively, are $470, $446, $364 and $364. The total registration for 1934-1935 was 220; graduates, 47. The next session begins Sept. 24, 1935, and ends June 10, 1936. The Dean is Loren Roscoe Chandler, M.D.

COLORADO

Denver

UNIVERSITY OF COLORADO SCHOOL OF MEDICINE, 4200 East Ninth Avenue.—Organized in 1883. Classes were graduated in 1885 and in all subsequent years except 1898 and 1899. Denver and Gross College of Medicine was merged, Jan. 1, 1911. Coeducational since organization. The faculty is composed of 57 professors and 130 lecturers, instructors and assistants, a total of 187. The course covers four years of nine months each. The entrance requirements are three years of collegiate work. The fees for residents of Colorado, for each of the four years are, respectively, $211, $231, $181 and $191. Nonresidents are charged $132 additional each year. The total registration for 1934-1935 was 205; graduates, 47. The next session begins Sept. 30, 1935, and ends June 15, 1936. The Dean is Maurice H. Rees, M.D.

CONNECTICUT

New Haven

YALE UNIVERSITY SCHOOL OF MEDICINE, 333 Cedar Street.—Chartered in 1810 as the Medical Institution of Yale College. Organized in 1812; instruction began in 1813; first class graduated in 1814. A new charter in 1879 changed the name to the Medical Department of Yale College. In 1884, the Connecticut Medical Society surrendered such authority as had been granted by the first charter. In 1887, Yale College became Yale University. Coeducational since 1916. The faculty consists of 127 professors and 180 lecturers and assistants, a total of 307. The requirements for admission are three years of collegiate work. The course covers four years of nine months each. The fees for the four years, respectively, are $505, $500, $500 and $520. The total registration for 1934-1935, was 207; graduates, 47. The next session begins Sept. 23, 1935, and ends June 10, 1936. The Dean is Stanhope Bayne-Jones, M.D.

DISTRICT OF COLUMBIA

Washington

GEORGETOWN UNIVERSITY SCHOOL OF MEDICINE, 3900 Reservoir Road, N.W.—Organized 1851. First class graduated in 1852. The faculty is composed of 55 professors, 36 associate professors, 3 assistant professors, and 139 instructors; total, 233. Three years of collegiate work is required for entrance. The course of study covers four terms of eight and one-half months each. The present fees for each of the four sessions, respectively, are $465, $460, $410 and $450. The total registration for 1934-1935 was 493; graduates, 113. The next session begins Sept. 23, 1935, and ends June 8, 1936. The Dean is David V. McCauley, S.J., Ph.D.

GEORGE WASHINGTON UNIVERSITY SCHOOL OF MEDICINE, 1335 H Street, N.W.—Organized in 1825 as the Medical Department of Columbian College. Also authorized to use the name National Medical College. Classes were graduated in 1826 and in all subsequent years except 1834 to 1838, and 1861 to 1863, inclusive. The original title was changed to Medical Department of Columbian University in 1873. In 1903 it absorbed the National University Medical Department. In 1904, by an act of Congress, the title of George Washington University was granted to the institution. Coeducational since 1884. The faculty is composed of 54 professors and 110 instructors, demonstrators and assistants, a total of 164. Two years of collegiate work is required for admission. The course covers four years of thirty-two weeks each. The fees for the four years, respectively, are $500 each year. The total registration for 1934-1935 was 284; graduates 71. The next session begins Sept. 25, 1935 and ends June 6, 1936. The Dean is Earl B. McKinley, M.D.

HOWARD UNIVERSITY COLLEGE OF MEDICINE, Fifth and W Streets, N.W.—Chartered in 1867. Organized in 1869. The first class graduated in 1871. Coeducational since organization. Negro students compose a majority of those in attendance. The faculty comprises 30 professors and 79 lecturers and assistants, 109 in all. The admission requirements are at least two years of collegiate work. The course covers four years of thirty-three weeks each. The fees for each of the four sessions, respectively, are $269, $269, $269 and $276. Registration for 1934-1935 was 171; graduates, 55. The next session begins Sept. 24, 1935, and ends June 5, 1936. The Dean is Numa P. G. Adams, M.D.

GEORGIA

Atlanta

EMORY UNIVERSITY SCHOOL OF MEDICINE, 50 Armstrong Street and Druid Hills.—Organized in 1854 as the Atlanta School of Medicine. Classes graduated 1855 to 1861, when it suspended. Reorganized in 1865. A class graduated in 1865 and each subsequent year except 1874,

In 1898 it merged with the Southern Medical College (organized in 1878), taking the name of Atlanta College of Physicians and Surgeons. In 1913 it merged with the Atlanta School of Medicine (organized in 1905), reassuming the name of Atlanta Medical College. Became the Medical Department of Emory University in 1915; assumed present title in 1917. Two years of collegiate work is required for admission. The faculty consists of 19 professors and 168 associates and assistants, a total of 187. The course of study is four years of thirty-two weeks each. The fees for each of the four years are $300. Total registration for 1934-1935 was 222; graduates, 54. The next session begins Sept. 30, 1935, and ends June 8, 1936. The Dean is Russell H. Oppenheimer, M.D.

Augusta

UNIVERSITY OF GEORGIA SCHOOL OF MEDICINE, University Place.—Organized in 1828 as the Medical Academy of Georgia, the name being changed to the Medical College of Georgia in 1829. Since 1873 it has been known as the Medical Department of the University of Georgia, the name being changed July 1, 1933, to University of Georgia School of Medicine. Property transferred to university in 1911. Classes were graduated in 1833 and all subsequent years except 1862 and 1863. Coeducation was begun in 1920. The faculty includes 47 professors and 32 assistants, 79 in all. Two years of collegiate work is required for admission. The course is four years of thirty-four weeks each. The fees for each of the four years are $185 for residents of Georgia, and $365 each year for nonresidents. The total registration for 1934-1935 was 144; graduates 34. The next session begins Sept. 23, 1935, and ends June 8, 1936. The Dean is G. Lombard Kelly, M.D.

ILLINOIS

Chicago

LOYOLA UNIVERSITY SCHOOL OF MEDICINE, 706 South Lincoln Street.—Incorporated in 1915 as the Bennett Medical College, and operated as an organic part of Loyola University, by virtue of an agreement entered into with the trustees of Bennett Medical College. Present title assumed in 1917. The Chicago College of Medicine and Surgery was purchased in 1917. The first class graduated in 1916. Coeducational. Two years of collegiate work is required for admission. The course of study is five years, including an internship. The B.S. degree in medicine is conferred at the end of the third year. The faculty is composed of 55 professors, and 238 assistants, lecturers, instructors and others, a total of 293. The fees for each year are $371, $407, $336 and $298, respectively. The total enrolment for 1934-1935 was 487; graduates, 96. The next session begins Sept. 25, 1935, and ends June 13, 1936. The Dean is Louis D. Moorhead, M.D.

NORTHWESTERN UNIVERSITY MEDICAL SCHOOL, 303 East Chicago Avenue.—Organized in 1859 as the Medical Department of Lind University. First class graduated in 1860. In 1864 it became independent as the Chicago Medical College. It united with Northwestern University in 1869 but retained the name of Chicago Medical College until 1891, when the present title was taken. Became an integral part of Northwestern University in 1905. Coeducational since 1926. The faculty comprises 116 professors, 288 associates and instructors, a total of 404. The requirement for admission is three years of collegiate work. The B.S. degree in medicine is conferred at the end of the third year. The course covers four years of eight and one-half months each and a fifth year spent in an approved hospital as an intern or in other practical work. The total fees are $365 each year. The total registration for 1934-1935 was 557; graduates, 146. The next session begins Oct. 1, 1935, and ends June 13, 1936. The Dean is Irving S. Cutter, M.D.

UNIVERSITY OF CHICAGO, RUSH MEDICAL COLLEGE, 1758 West Harrison Street.—Chartered in 1837; held first class in 1843. First class graduated in 1844. In 1887 the college became the medical department of Lake Forest University, retaining, however, its self-government. This relation was dissolved in April, 1898, and in the same month affiliation with the University of Chicago was established. Coeducational since 1898. Since that time the work of the first two years has been given on the University Quadrangles. In May, 1924, by a new contract, the University of Chicago took over the work of Rush Medical College as a department of the university. Thereafter only clinical work has been offered by Rush Medical College. Since 1914 the course has included a fifth year consisting of a hospital internship or of a fellowship in one of the departments. Three years of collegiate work is required for admission. The year is divided into four quarters of twelve weeks each; the completion of the work of three of these quarters gives credit for a college year. The faculty is composed of 136 professors, 147 associates, instructors and others, a total of 283. The fee for the third year is $391, and for the fourth, $411. Total registration for 1934-1935 was 312; graduates, 152. The next session begins Sept. 30, 1935, and ends June 16, 1936. The school is in session all year except the month of September. The Dean is Ernest E. Irons, M.D.

UNIVERSITY OF CHICAGO, THE SCHOOL OF MEDICINE OF THE DIVISION OF THE BIOLOGICAL SCIENCES, Fifty-Eighth Street and Ellis Avenue.—Organized in 1924. The work of the first two years of the medical course has been given on the Quadrangles since 1899, in cooperation with Rush Medical College, and that of the third and fourth clinical years was added in 1924 with the organization of this medical school and the construction on the Quadrangles of the university hospitals and clinics. Coeducational. A fifth year, spent in successful internship in an approved hospital or in advanced work in some branch of medical science, is required for the degree of M.D. The faculty is composed of 98 professors, 132 associates, instructors and others, a total of 230. The requirements for admission are three years of collegiate work. The B.S. degree in medicine is conferred at the end of the second year. The year is divided into four quarters of twelve weeks each; the completion of the work of three of these quarters gives credit for a college year. Students are admitted at the beginning of the autumn quarter. The tuition fees for each of the four years are $375. Total registration for 1934-1935 was 339; graduates, 34. The next session begins Oct. 2, 1935, and ends June 17, 1936. The Dean of Medical Students is B. C. H. Harvey, M.D.

UNIVERSITY OF ILLINOIS COLLEGE OF MEDICINE, 1853 West Polk Street.—Organized in 1882 as the College of Physicians and Surgeons. The first class graduated in 1883. It became the Medical Department of the University of Illinois by affiliation in 1897. Relationship with the university was canceled in June, 1912, and was restored in March, 1913, when the present title was assumed. Coeducational since 1898. Two years of collegiate work is required for admission. The curriculum covers four years of thirty-two weeks each, and a year of internship in an approved hospital. The B.S. degree in medicine is conferred at the end of the second year. The faculty is composed of 119 of professorial rank and 267 associates, instructors and assistants, a total of 386. The tuition is $200 a year for students who are residents of Illinois; $300 a year for nonresident students. The total registration for 1934-1935 was 614; graduates, 145. The next session begins Sept. 30, 1935, and ends June 5, 1936. The Dean is David John Davis, M.D.

INDIANA

Bloomington-Indianapolis

INDIANA UNIVERSITY SCHOOL OF MEDICINE.—Organized in 1903 but did not give all the work of the first two years of the medical course until 1905. In 1907, by union with the State College of Physicians and Surgeons, the complete course in medicine was offered. In 1908 the Indiana Medical College, which was formed in 1905 by the merger of the Medical College of Indiana (organized in 1878), the Central College of Physicians and Surgeons (organized in 1879), and the Fort Wayne College of Medicine (organized in 1879) merged into it. The first class was graduated in 1908. Coeducational since organization. The faculty consists of 270 professors, lecturers, associates and assistants. Two years of collegiate work is required for admission. The B.S. degree in medicine is conferred. The work of the first year is given at Bloomington and the work of the next three years at Indianapolis. The regular fee for the medical course for all four years is $205 a year for residents of Indiana, and $410 for nonresidents. The total registration for 1934-1935 was 448; graduates, 93. The next session begins Sept. 17, 1935, and ends June 15, 1936. The Dean at Bloomington is Burton D. Myers, M.D., and the Dean at Indianapolis is Willis Dew Gatch, M.D.

IOWA

Iowa City

STATE UNIVERSITY OF IOWA COLLEGE OF MEDICINE, University Campus.—Organized in 1869. First session began in 1870. First class graduated in 1871. Absorbed Drake University College of Medicine in 1913. Coeducational since 1870. The faculty is made up of 46 professors, 63 lecturers, demonstrators and assistants, a total of 109. Two years of collegiate work is required for admission. The B.S. degree in medicine is conferred. The course of study covers four years of thirty-four weeks each. The tuition fee is $192 each year for residents of Iowa and $456 for nonresidents. Total registration for 1934-1935 was 354; graduates, 62. The next session begins Sept. 23, 1935, and ends June 1, 1936. The Dean is Ewen Murchison MacEwen, M.D.

KANSAS

Lawrence-Kansas City

UNIVERSITY OF KANSAS SCHOOL OF MEDICINE.—Organized in 1880. It offered only the first two years of the medical course until 1905, when it merged with the Kansas City (Mo.) Medical College, founded in 1869, the College of Physicians and Surgeons, founded in 1894, and the Medico-Chirurgical College, founded in 1897. Absorbed Kansas Medical College in 1913. First class graduated in 1906. The clinical courses are given at Kansas City. Coeducational since 1880. The faculty includes 56 professors and 134 instructors, assistants and others, a total of 190. The requirement for admission is two years of collegiate work. The B.S. degree in medicine is conferred at the end of the second year. The course covers four years of nine months each. The total fees for residents of the state for each of the four years are, respectively, $126, $113, $117 and $120. For nonresidents the fees are $196, $192, $203 and $207. The total registration for 1934-1935 was 287; graduates, 67. The next session begins Sept. 19, 1935, and ends June 8, 1936. The Dean is H. R. Wahl, M.D., Kansas City.

KENTUCKY

Louisville

UNIVERSITY OF LOUISVILLE SCHOOL OF MEDICINE, First and Chestnut Streets.—Organized in 1837 as Louisville Medical Institute. The first class graduated in 1838, and a class graduated each subsequent year except 1863. In 1846 the name was changed to University of Louisville Medical Department. In 1907 it absorbed the Kentucky University Medical Department; in 1908, the Louisville Medical College, the Hospital College of Medicine and the Kentucky School of Medicine. In 1922 it changed its name to the University of Louisville School of Medicine. Coeducational since organization. Two years of collegiate work is required for admission. The faculty numbers 69 professors and 85 assistants, instructors and others, a total of 154. Course covers four years of thirty-two weeks each, exclusive of vacations and examinations. Fees for four years are, respectively, $389, $389, $394 and $404. Total registration for 1934-1935 was 340; graduates 79. The next session begins Sept. 19, 1935, and ends June 6, 1936. The Dean is John Walker Moore, M.D.

LOUISIANA

New Orleans

LOUISIANA STATE UNIVERSITY MEDICAL CENTER, 1532 Tulane Avenue.—Organized January, 1931. Coeducational. First session October, 1931, with students of first and third years. Faculty comprises 30 professors and 125 assistant professors, instructors and assistants, a total of 155. Course covers four years of no less than 32 weeks each and one year of general rotation or laboratory internship in approved hospital. A minimum of three years' collegiate work is required for admission. Total fees, $92 each year for residents of Louisiana; additional tuition of $300 each year for nonresidents. Total registration for 1934-1935 was 301; graduates, 19. The next session begins Sept. 16, 1935, and ends June 1, 1936. The Dean is Arthur Vidrine, M.D.

TULANE UNIVERSITY OF LOUISIANA SCHOOL OF MEDICINE, 1430 Tulane Avenue.—Organized in 1834 as the Medical College of Louisiana. Classes were graduated in 1835 and in all subsequent years except 1863-1865, inclusive. It was transferred to the Medical Department of the University of Louisiana in 1847, and became the Medical Department of the Tulane University of Louisiana in 1884. Present title in 1913. Coeducational since 1915. The faculty comprises 30 professors and 135 associate and assistant professors, instructors and assistants, a total of 165. The course covers four years of thirty-two weeks each. A minimum of two years of collegiate work is required for admission. Total fees for each of the four years, respectively, are $350, $340, $325 and $355. The total registration for 1934-1935 was 471; graduates, 125. The next session begins Sept. 27, 1935, and ends June 10, 1936. The Dean is Charles Cassedy Bass, M.D.

MARYLAND

Baltimore

JOHNS HOPKINS UNIVERSITY SCHOOL OF MEDICINE, Washington and Monument Streets.—Organized in 1887. Offered preliminary course only until 1893. The first class graduated in 1897. Coeducational since organization. The faculty consists of 73 professors and 307 instructors, assistants and others, a total of 380. The requirement for admission is a collegiate degree. The course extends over four years of eight and one-half months each. The total fees for each year are, respectively, $621, $620, $620 and $620. Total registration for 1934-1935 was 276; graduates, 69. The next session begins Oct. 1, 1935, and ends June 9, 1936. The Dean is Alan M. Chesney, M.D.

UNIVERSITY OF MARYLAND SCHOOL OF MEDICINE AND COLLEGE OF PHYSICIANS AND SURGEONS, Lombard and Greene Streets.—Organized in 1807 as the College of Medicine of Maryland. The first class graduated in 1810. In 1812 it became the University of Maryland School of Medicine. Baltimore Medical College was merged into it in 1913. In 1915 the College of Physicians and Surgeons of Baltimore was merged and the present name assumed. Coeducational since 1918. The faculty consists of 96 professors and 158 instructors and assistants, a total of 254. Two years of collegiate work is required for admission. The course covers four years of eight months each. The fees for the four years, respectively, are $410, $400, $400 and $415 for residents of the state; for nonresidents the fees are $175 additional each year. Total registration for 1934-1935 was 437; graduates, 105. The next session begins Sept. 24, 1935, and ends June 6, 1936. The Dean is J. M. H. Rowland, M.D.

MASSACHUSETTS

Boston

BOSTON UNIVERSITY SCHOOL OF MEDICINE, 80 East Concord Street.—Organized in 1873 as a homeopathic institution. In 1874 the New England Female Medical College, founded in 1848, was merged into it. The first class was graduated in 1874. Became nonsectarian in 1918. Coeducational since organization. Three years of collegiate work is required for admission. The faculty includes 20 professors, 152 associates and others, a total of 172. The course covers four years. Total fees for each of the four years, respectively, are $426, $421, $421 and $435. Total registration for 1934-1935 was 253; graduates, 55. The next session begins Sept. 26, 1935, and ends June 15, 1936. The Dean is Alexander S. Begg, M.D.

HARVARD UNIVERSITY MEDICAL SCHOOL, 25 Shattuck Street.—Organized in 1782. The first class graduated in 1788. It has a faculty of 146 professors and 347 other instructors and assistants, a total of 493. Two years of collegiate work is required for admission. The total fee for each of the four years is $400, plus $5 the first year for matriculation. The total registration for 1934-1935 was 523; graduates, 137. The next session begins Sept. 23, 1935, and ends June 18, 1936. The Dean is Charles Sidney Burwell, M.D.

TUFTS COLLEGE MEDICAL SCHOOL, 416 Huntington Avenue.—Organized in 1893 as the Medical Department of Tufts College. The first class graduated in 1894. Coeducational since 1894. It has a faculty of 75 professors and 256 assistants, lecturers and others, a total of 331. A bachelor's degree is required for admission. The course covers four years of eight months each. The total fees for each of the four years are $412, $407, $407 and $417. Total registration for 1934-1935 was 484; graduates, 119. The next session begins Sept. 25, 1935, and ends June 15, 1936. The Dean is A. Warren Stearns, M.D.

MICHIGAN

Ann Arbor

UNIVERSITY OF MICHIGAN MEDICAL SCHOOL.—Organized in 1850 as the University of Michigan Department of Medicine and Surgery. The first class graduated in 1851. Present title assumed in 1915. Coeducational since 1870. It has a faculty of 26 professors, 13 associate professors, 28 assistant professors, 152 assistants, instructors and lecturers; a total of 219. The entrance requirements are ninety semester hours. The curriculum covers four years of nine months each. The total fees for Michigan students are $200, $205, $205 and $202 for each of the four years, respectively, plus a matriculation fee of $10; for nonresidents, $100 a year additional. The matriculation fee for nonresidents is $25. The total registration for 1934-1935 was 472; graduates, 105. The next session begins Sept. 30, 1935, and ends June 22, 1936. The Dean is A. C. Furstenberg, M.D.

Detroit

WAYNE UNIVERSITY COLLEGE OF MEDICINE, 1516 St. Antoine Street.—Organized as the Detroit College of Medicine in 1885 by consolidation of Detroit Medical College, organized in 1868, and the Michigan College of Medicine, organized in 1880. Reorganized with the title of Detroit College of Medicine and Surgery in 1913. The first class graduated in 1886. In 1918 it became a municipal institution under the control of the Detroit Board of Education. In 1934 the name was changed by the action of the Detroit Board of Education to Wayne University College of Medicine, as a part of the program of consolidation of the Detroit City Colleges into a university system. Coeducational since 1917. Entrance requirement is an academic degree or 90 semester hours of academic credit with "combined degree" guaranteed by school of arts and sciences. The faculty consists of 33 professors, 101 lecturers and others, a total of 134. The course covers four years of nine months each and a fifth year of intern work. The total fees for each of the first four years are, for Detroit residents, $283; for nonresidents who reside in Michigan, $383, and for nonresidents from outside the state, $408. For the fifth or intern year the resident student fee is $50; the nonresident fee is $85. The total registration for 1934-1935 was 310; graduates, 74. The next session begins Sept. 26, 1935, and ends June 19, 1936. The Assistant Dean is Wm. J. Stapleton Jr.

MINNESOTA

Minneapolis

UNIVERSITY OF MINNESOTA MEDICAL SCHOOL.—Organized in 1883 as the University of Minnesota College of Medicine and Surgery, reorganized in 1888 by absorption of St. Paul Medical College and Minnesota Hospital College. The first class graduated in 1889. In 1908 the Minneapolis College of Physicians and Surgeons, organized in 1883, was merged. In 1909 the Homeopathic College of Medicine and Surgery was merged. Present title in 1913. Coeducational since organization. The faculty includes 87 professors and 216 instructors, a total of 303. The curriculum covers four years of nine months each, and a year's internship in an approved hospital. The school is operated on the four-quarter plan. The entrance requirements are two years of university work, which must include six semester credits of rhetoric, eight semester credits of physics; thirteen credits of general chemistry, qualitative and quantitative analysis and organic chemistry, eight credits of zoology, and a reading knowledge of scientific German, with a "C" average in all subjects and in the sciences. Students are required to meet the requirements for a degree of B.S. or B.A. before receiving the degree of Bachelor of Medicine (M.B.) which is granted at the end of the four-year course. The M.D. degree is conferred after a year of intern work, of advanced laboratory work, or of public health work has been completed. Students are graduated at the end of any quarter in which work is completed and examinations passed. Total fees are $243 for residents and $318 for nonresidents, each year of three quarters. The total registration for 1934-1935 was 502; graduates, 123. The next session begins Sept. 30, 1935, and ends June 15, 1936. The Dean is Elias P. Lyon, Ph.D.

MISSISSIPPI

University

UNIVERSITY OF MISSISSIPPI SCHOOL OF MEDICINE.—Organized in 1903. Coeducational since organization. Gives only the first two years of the medical course. A clinical department was established at Vicksburg in 1908 but was discontinued in 1910 after graduating one class. The session extends over eight and one-half months. Entrance requirement is three years of collegiate work. The B.S. degree in medicine is conferred at the end of the second year. The faculty includes 8 professors, 1 assistant professor and 9 instructors, assistants and others, a total of 18. The total fees for the first year are $392, and for the second year $399. The nonresident fee is $50 additional per year. No freshman students will be enrolled during the session, 1935-1936. The total registration for 1934-1935 was 52. The next session begins Sept. 18, 1935, and ends June 1, 1936. The Acting Dean is B. S. Guyton, M.D.

MISSOURI

Columbia

UNIVERSITY OF MISSOURI SCHOOL OF MEDICINE.—Organized at St. Louis in 1845; was discontinued in 1855 but was reorganized at Columbia in 1872. Teaching of the clinical years was suspended in 1909 Coeducational since 1872. The faculty includes 13 professors and 13 assistant professors, lecturers and others, a total of 26. The entrance requirements are 90 semester hours of collegiate work. The B.S. degree in medicine is conferred at the end of the second year. Total fees for the first year are $167; for the second, $200. Nonresidents of the state pay $25 per semester extra. Total registration for 1934-1935 was 82. The next session begins Sept. 9, 1935, and ends June 3, 1936. The Dean is Dudley S. Conley, M.D.

St. Louis

ST. LOUIS UNIVERSITY SCHOOL OF MEDICINE, 1402 South Grand Boulevard.—Organized in 1901 as the Marion-Sims-Beaumont Medical College by union of Marion-Sims Medical College, organized in 1890,

and Beaumont Hospital Medical College, organized in 1886. First class graduated in 1902. It became the Medical School of St. Louis University in 1903. The faculty is composed of 77 professors and 238 instructors and assistants, a total of 315. The requirement for admission is a qualitative standard of two years of collegiate study in the customary subjects, but applicants presenting meritorius credit in excess of the two year minimum are accepted by preference. The B.S. degree in medicine is conferred at the end of the second year. The curriculum covers four years of thirty-two weeks each. The summer is optional and offers courses academically equivalent to those in the regular session. The total fees for the four years, respectively, are $425, $420, $420 and $455. The total registration for 1934-1935 was 518; graduates, 110. The next session begins Sept. 19, 1935, and ends June 1, 1936. The Dean is Alphonse M. Schwitalla, S.J., Ph.D.

WASHINGTON UNIVERSITY SCHOOL OF MEDICINE, Kingshighway and Euclid Avenue.—Organized in 1842 as the Medical Department of St. Louis University. The first class graduated in 1843. In 1855 it was chartered as an independent institution under the name of St. Louis Medical College. In 1891 it became the Medical Department of Washington University. In 1899 it absorbed the Missouri Medical College. Coeducational since 1918. The faculty comprises 106 professors and 204 lecturers, instructors and others, a total of 310. Four years of collegiate work is required for admission. The B.S. degree in medicine is conferred at the end of the third or fourth year. The course is four years of eight months each. The total fees for the four years are, respectively, $425, $419, $419 and $424. The total registration for 1934-1935 was 351; graduates, 92. The next session begins Sept. 26, 1935, and ends June 9, 1936. The Dean is W. McKim Marriott, M.D.

NEBRASKA

Omaha

CREIGHTON UNIVERSITY SCHOOL OF MEDICINE, 306 North Fourteenth Street.—Organized in 1892 as the John A. Creighton Medical College. The first class graduated in 1893. Present title in 1921. Coeducational since organization. It has a faculty of 68 professors and 70 instructors, lecturers and assistants, a total of 138. Two years of collegiate work required for admission. The B.S. degree in medicine is conferred at the end of the second year. The curriculum covers four years of eight months each. The total fees each year for the four years are, respectively, $393, $393, $348 and $356. Total registration for 1934-1935 was 303; graduates, 69. The next session begins Sept. 19, 1935, and ends June 4, 1936. The Dean is Bryan M. Riley, M.D.

UNIVERSITY OF NEBRASKA COLLEGE OF MEDICINE, Forty-Second Street and Dewey Avenue.—Organized in 1881 as the Omaha Medical College. The first class graduated in 1882. It became the Medical Department of Omaha University in 1891. In 1902 it affiliated with the University of Nebraska, with the present title. The instruction of the first two years was given at Lincoln and of the last two at Omaha until 1913, when the work of all four years was transferred to Omaha. Coeducational since 1882. The faculty is composed of 62 professors and 60 lecturers and instructors, a total of 122. Sixty-five semester hours of collegiate work is required for admission. The B.S. degree in medicine is conferred at the end of the second year. The fees for each of the four years, respectively, are $219, $214, $214 and $214. Total registration for 1934-1935 was 340; graduates, 77. The next session begins Sept. 23, 1935, and ends June 8, 1936. The Dean is C. W. M. Poynter, M.D.

NEW HAMPSHIRE

Hanover

DARTMOUTH MEDICAL SCHOOL.—Organized by Dr. Nathan Smith in 1797. The first class graduated in 1798. It is under the control of the trustees of Dartmouth College. Courses of the third and fourth year were discontinued in 1914. The faculty consists of 16 professors and 10 instructors, a total of 26. Three years of collegiate work is required for admission. The course covers nine calendar months in each year, or eight months of actual teaching. Candidates for the A.B. degree in Dartmouth College may substitute the work of the first year in medicine for that of the senior year in the academic department. The fees for the first year are $410 and $400 for the second year. The total registration for 1934-1935 was 39. The next session begins Sept. 19, 1935, and ends June 15, 1936. The Dean is John P. Bowler, M.D.

NEW YORK

Albany

ALBANY MEDICAL COLLEGE, 47 New Scotland Avenue.—Organized in 1838. The first class graduated in 1839. It became the Medical Department of Union University in 1873. In 1915, Union University assumed educational control. Coeducational since 1915. The faculty is composed of 27 professors and 61 instructors, assistants and others, a total of 88. A collegiate degree is required for admission. The curriculum covers four years of eight months each. The total fees for four years, respectively, are $445, $420, $405 and $405. The total registration for 1934-1935 was 112; graduates, 28. The next session begins Sept. 30, 1935, and ends June 8, 1936. The Dean is Thomas Ordway, M.D.

Brooklyn

LONG ISLAND COLLEGE OF MEDICINE, 350 Henry Street.—Organized in 1858 as the Long Island College Hospital. The first class graduated in 1860 and the last class in 1930. Reorganized with a new charter in 1930 as the present institution. The first class graduated in 1931. Coeducational. It has a faculty of 124 professors, associate, assistant, clinical and assistant clinical professors, and 177 lecturers, instructors, assistants and others, a total of 301. Seventy-two semester hours of collegiate work is required for admission. The course covers four years (first, second and fourth years of eight months each, and the third year of nine months). The total fees for each of the four years are, respectively, $545, $555, $545 and $565. Total registration for 1934-1935 was 407; graduates, 98. The next session begins Sept. 30, 1935, and ends June 2, 1936. The Acting Dean is Wade W. Oliver, M.D.

Buffalo

UNIVERSITY OF BUFFALO SCHOOL OF MEDICINE, 24 High Street.—Organized in 1846. The first class graduated in 1847. It absorbed the Medical Department of Niagara University in 1898. Coeducational since organization. The faculty is composed of 89 professors and 152 associates, assistants and others, a total of 241. Two years of collegiate work is required for admission. The course covers four years of eight months each. The total fees for each of the four years are, respectively, $530, $525, $520 and $530. Total registration for 1934-1935 was 277; graduates, 66. The next session begins Sept. 30, 1935, and ends June 10, 1936. The Dean is Edward W. Koch, M.D.

Ithaca-New York

CORNELL UNIVERSITY MEDICAL COLLEGE, York Avenue and Sixty-Ninth Street, New York.—Organized in 1898. The work of the first year may be taken either in Ithaca or New York. Coeducational since organization. The faculty is composed of 118 professors and 267 assistants, lecturers, instructors and others, a total of 385. All candidates for admission must be graduates of approved colleges or scientific schools or seniors of approved colleges that will permit them to substitute the first year of this medical school for the fourth year of their college course and will confer on them the bachelor degree on the completion of the first year's work. The fees for each of the four years are, respectively, $510, $500, $510 and $525. Total registration for 1934-1935 was 287; graduates, 64. The next session begins Sept. 30, 1935, and ends June 17, 1936. The Acting Dean is William S. Ladd, M.D.

New York

COLUMBIA UNIVERSITY COLLEGE OF PHYSICIANS AND SURGEONS, 630 West One Hundred and Sixty-Eighth Street.—The medical faculty of Columbia College, then known as King's College, was organized in 1767. Instruction was interrupted by the War of the Revolution. The faculty was reestablished in 1792 and merged in 1814 with the College of Physicians and Surgeons, which had received an independent charter in 1807. In 1860 the College of Physicians and Surgeons became the Medical Department of Columbia College. This merger became permanent by legislative enactment in 1891. Columbia College became Columbia University in 1896. The medical school has been coeducational since 1917. The faculty is composed of 180 professors and 420 instructors, demonstrators and others, a total of 600. Three years of collegiate work is required for admission. The work covers four years of eight months each. The total fees for the four years, respectively, are $545, $530, $530 and $550. Total registration for 1934-1935 was 403; graduates, 97. The next session begins Sept. 25, 1935, and ends June 13, 1936. The Dean is Willard C. Rappleye, M.D.

NEW YORK HOMEOPATHIC MEDICAL COLLEGE AND FLOWER HOSPITAL, 450 East Sixty-Fourth Street.—Organized in 1858. Incorporated in 1860 as the Homeopathic Medical College of the State of New York. The title New York Homeopathic Medical College was assumed in 1869; present title in 1908. The first class graduated in 1861. Coeducational since 1919. Two years of collegiate work is required for admission. The course covers four years of eight months each. It has a faculty of 53 professors and associate professors, 17 assistant professors and 121 lecturers and assistants, a total of 191. The total fees for the four years are, respectively, $540, $530, $530 and $560. Total registration for 1934-1935 was 328; graduates, 63. The next session begins Sept. 16, 1935, and ends June 2, 1936. The Dean is Claude A. Burrett, M.D.

NEW YORK UNIVERSITY COLLEGE OF MEDICINE, 477 First Avenue.—Organized in 1898 by the union of the New York University Medical College, organized in 1841, and the Bellevue Hospital Medical College, organized in 1861. Named University and Bellevue Hospital Medical College from 1898 to February 1935 when it was changed to New York University College of Medicine. First class graduated in 1899. Coeducational since 1919. The faculty is composed of 130 professors, associate, assistant, clinical and assistant clinical professors, and 314 lecturers, instructors and others, a total of 444. The course covers four years. Entrance requirements are that all candidates must be graduates of approved colleges or scientific schools, or seniors in good standing in approved colleges or scientific schools on condition that their faculty will permit them to substitute the first year in the New York University College of Medicine for the fourth year of their college course and will confer the bachelor's degree on the satisfactory completion of the year's work. The fees for the four years, respectively, are $552, $543, $527 and $570. Total registration for 1934-1935 was 533; graduates, 126. The next session begins Sept. 18, 1935, and ends June 10, 1936. The Dean is John Wyckoff, M.D.

Rochester

UNIVERSITY OF ROCHESTER SCHOOL OF MEDICINE, Elmwood Avenue and Crittenden Boulevard.—Organized in 1925 as the Medical Department of the University of Rochester. Coeducational since organization. The faculty is composed of 53 professors, 160 lecturers, assistants, instructors and others, a total of 213. The work embraces a graded course of four years of nine months each. Three years of collegiate work is required for admission. The total fees for each year are $400. The total registration for 1934-1935 was 167; graduates, 46. The next session begins Sept. 16, 1935, and ends June 15, 1936. The Dean is George Hoyt Whipple, M.D.

Syracuse

SYRACUSE UNIVERSITY COLLEGE OF MEDICINE, 309-311 South McBride Street.—Organized in 1872, when the Geneva Medical College, chartered in 1834, was removed to Syracuse, under the title "The College of Physicians and Surgeons of Syracuse University." Present title assumed in 1875, when a compulsory three-year graded course was established. The first class graduated in 1873 and a class graduated each subsequent year. In 1889 the amalgamation with the university was made complete. Course extended to four years in 1896. Coeducational since organization. The faculty is composed of 43 professors and 141 associate and assistant professors, lecturers and instructors, a total of 184. Two years of a recognized college course is required for admission. The course covers four years of thirty-four weeks each. The fee for each of the first three years is $500; for the fourth year, $510. The total enrolment for 1934-1935 was 191; graduates, 45. The next session begins Sept. 26, 1935, and ends June 1, 1936. The Dean is H. G. Weiskotten, M.D.

NORTH CAROLINA

Chapel Hill

UNIVERSITY OF NORTH CAROLINA SCHOOL OF MEDICINE.—Organized in 1890. Until 1902 this school gave only the work of the first two years, when the course was extended to four years by the establishment of a department at Raleigh. The first class graduated in 1903. A class was graduated each subsequent year, including 1910, when the clinical department at Raleigh was discontinued. Coeducational since 1914. Three years of collegiate work is required for admission. The B.S. degree in medicine is conferred at the end of the second year. The faculty is composed of 12 professors and 4 instructors, a total of 16. The fees for each year are $250 for residents; nonresidents, an additional fee of $100. The total registration for 1934-1935 was 74. The next session begins Sept. 19, 1935, and ends June 9, 1936. The Dean is C. S. Mangum, M.D.

Durham

DUKE UNIVERSITY SCHOOL OF MEDICINE.—Organized in 1925. The first class was admitted, Oct. 1, 1930. Coeducational. The faculty is composed of 10 professors and 81 associate and assistant professors, lecturers, instructors and assistants, a total of 91. The entrance requirements are seventy hours of collegiate work. The academic year consists of four quarters of eleven weeks each. Students either may study four quarters each year, and if satisfactory will receive the M.D. certificate after three calendar years, or three quarters in each year, and if satisfactory will be graduated after four calendar years. The B.S. degree in medicine is conferred after six quarters. Students are urged to spend three years in hospital or laboratory work after graduation and must give assurance satisfactory to the executive committee that they will spend at least two years. The fees are $450 for each year of three quarters. Total registration for 1934-1935 was 210; graduates, 47. The next session begins Sept. 30, 1935, and ends June 13, 1936. The Dean is Wilburt C. Davison, M.D.

Wake Forest

WAKE FOREST COLLEGE SCHOOL OF MEDICINE.—Organized in 1902. The faculty numbers 9 professors and 8 assistants. Ninety semester hours of collegiate work is required for admission. Each annual course extends over nine months. The fees for the first year are $235 and $230 for the second year. The total registration for 1934-1935 was 63. The next session begins Sept. 12, 1935, and ends June 2, 1936. The Dean is Thurman D. Kitchin, M.D.

NORTH DAKOTA

Grand Forks

UNIVERSITY OF NORTH DAKOTA SCHOOL OF MEDICINE.—Organized in 1905. Offers only the first two years of the medical course. Coeducational since organization. Three years' work in a college of liberal arts is required for admission. The B.S. degree in medicine is conferred at the end of the second year. The faculty consists of 5 professors and 8 instructors, a total of 13. The fees are $75 each year for resident students and $165 for nonresidents. The total registration for 1934-1935 was 70. The next session begins Sept. 17, 1935, and ends June 9, 1936. The Dean is H. E. French, M.D.

OHIO

Cincinnati

UNIVERSITY OF CINCINNATI COLLEGE OF MEDICINE, Eden and Bethesda Avenues.—Organized in 1909 by the union of the Medical College of Ohio (founded in 1819) with the Miami Medical College (founded in 1852). The Medical College of Ohio became the Medical Department of the University of Cincinnati in 1896. Under a similar agreement, March 2, 1909, the Miami Medical College also merged into the University, when the title of Ohio-Miami Medical College of the University of Cincinnati was taken. Present title assumed in 1915. Coeducational since organization. Candidates for admission to the freshman class must present three years of college preparation of not less than ninety hours. The B.S. degree in medicine is conferred at the end of the second year. The faculty consists of 123 professors and 214 associates, assistants, etc., a total of 337. The course covers four years of eight months each. A year's internship in an approved hospital is also required. The total fees for the four years are, respectively, $360, $365, $360 and $370, and if not legal citizens of Cincinnati, $50 additional. The total registration for 1934-1935 was 288; graduates, 73. The next session begins Sept. 23, 1935, and ends June 5, 1936. The Dean is Alfred Friedlander, M.D.

Cleveland

WESTERN RESERVE UNIVERSITY SCHOOL OF MEDICINE, 2109 Adelbert Road.—Organized in 1843 as the Cleveland Medical College. The first class graduated in 1844. It assumed the present title in 1881. In 1910 the Cleveland College of Physicians and Surgeons was merged. Coeducational since 1919. The faculty includes 74 professors and 192 lecturers, assistants and others, a total of 266. The curriculum covers three years of eight and one-half months each and one year of nine months. Three years of collegiate work is required for admission. The total fees for each of the four years are, respectively, $442, $435, $415 and $425. The total registration for 1934-1935 was 277; graduates, 71. The next session begins Sept. 19, 1935, and ends June 10, 1936. The Dean is Torald Sollmann, M.D.

Columbus

OHIO STATE UNIVERSITY COLLEGE OF MEDICINE, Neil and Eleventh Avenues.—Organized in 1907 as the Starling-Ohio Medical College by the union of Starling Medical College (organized in 1847 by charter granted by the State Legislature changing the name from Willoughby Medical College, which was chartered March 3, 1834) with the Ohio Medical University (organized 1890). In 1914 it became an integral part of the Ohio State University with its present title. Coeducational since organization. The faculty consists of 51 professors and assistant professors, 91 lecturers, instructors, demonstrators and others, a total of 142. Three years of collegiate work is required for admission. The course covers four years of thirty-four weeks each. Tuition fees are $246, $231, $231 and $241 each year, respectively, for residents of Ohio, and $150 additional for nonresidents. The total registration for 1934-1935 was 373; graduates, 83. The next session begins Oct. 1, 1935, and ends June 15, 1936. The Dean is J. H. J. Upham, M.D.

OKLAHOMA

Oklahoma City

UNIVERSITY OF OKLAHOMA SCHOOL OF MEDICINE.—Organized in 1900. Gave only the first two years of the medical course at Norman until 1910, when a clinical department was established at Oklahoma City. The first class graduated in 1911. Coeducational since organization. Since September, 1928, the entire course has been given at Oklahoma City. It has a faculty of 28 professors, 52 associate and assistant professors and 49 instructors, a total of 129. Two years of collegiate work is required for admission. The B.S. degree is conferred at the end of the second year. The course covers four years of nine months each. The total fees for the four years are, respectively, $128, $95, $23 and $25. For students residing outside the state of Oklahoma there is an additional fee of $200 a year. The total registration for 1934-1935 was 236; graduates, 55. The next session begins Sept. 16, 1935, and ends June 8, 1936. The Dean is Robert U. Patterson, M.D.

OREGON

Portland

UNIVERSITY OF OREGON MEDICAL SCHOOL, Marquam Hill.—Organized in 1887. The first class graduated in 1888, and a class graduated each subsequent year except 1898. The Willamette University Medical Department was merged in 1913. Coeducational since organization. It has a faculty of 71 professors and 190 lecturers, assistants and others, a total of 261. Entrance requirements are three years of collegiate work. The course covers four years of thirty-three weeks each. The total fees for the four years are, respectively, $260, $255, $250 and $250 for residents of Oregon, and $60 a year additional for nonresidents. The total registration for 1934-1935 was 234; graduates, 54. The next session begins Oct. 1, 1935, and ends June 4, 1936. The Dean is Richard B. Dillehunt, M.D.

PENNSYLVANIA

Philadelphia

HAHNEMANN MEDICAL COLLEGE AND HOSPITAL OF PHILADELPHIA, 235 North Fifteenth Street.—Organized in 1848 as the Homeopathic Medical College of Pennsylvania. In 1869 it united with the Hahnemann Medical College of Philadelphia, taking the latter title. Assumed present title in 1885. The first class graduated in 1849. Two years of collegiate work is required for admission. It has a faculty of 77 professors and 126 lecturers, instructors and others, in all, 203. The work covers four years of eight and one-half months each. Fees for each of the four years are, respectively, $455, $427, $427 and $450. The total registration for 1934-1935 was 498; graduates, 102. The next session begins Sept. 30, 1935, and ends June 11, 1936. The Dean is William A. Pearson, Ph.C.

JEFFERSON MEDICAL COLLEGE OF PHILADELPHIA, 1025 Walnut Street.—Organized in 1825 as the Medical Department of Jefferson College, Canonsburg, Pa. It was chartered with its present title in 1838. Classes have been graduated annually beginning 1826. In 1838 a separate university charter was granted without change of title, since which time it has continued under the direction of its own board of trustees. It has a faculty of 65 professors, associate and assistant professors and 178 associates, lecturers, demonstrators and instructors, a total of 243. A bachelor's degree is required for admission. The course of study covers four years of eight and one-half months each. The total fees for the four years, are respectively, $445, $430, $425 and $425. The total registration for 1934-1935 was 557; graduates, 142. The next session begins Sept. 23, 1935, and ends June 5, 1936. The Dean is Ross V. Patterson, M.D.

TEMPLE UNIVERSITY SCHOOL OF MEDICINE, Broad and Ontario Streets.—Organized in 1901. The first class graduated in 1904. Coeducational since organization. The faculty numbers 31 professors and 201

associates, assistants and others, a total of 232. Three years of collegiate work is required for admission. The fees for each of the four years, respectively, are $485, $455, $435 and $455. The total registration for 1934-1935 was 448; graduates, 100. The next session begins Sept. 25, 1935, and ends June 11, 1936. The Dean is William N. Parkinson, M.D.

UNIVERSITY OF PENNSYLVANIA SCHOOL OF MEDICINE, Thirty-Sixth and Pine Streets.—Organized in 1765. Classes were graduated in 1768 and in all subsequent years except 1772 and 1775-1779, inclusive. The original title was the Department of Medicine, College of Philadelphia. The present title was adopted in 1909. It granted the first medical diploma issued in America. In 1916 it took over the Medico-Chirurgical College of Philadelphia to develop it as a graduate school. Coeducational since 1914. The faculty consists of 104 professors, associate and assistant professors, and 301 lecturers, associates, instructors and others, a total of 405. Three years of collegiate work is required for admission. The course covers four years of thirty-three weeks each. The tuition fee is $500 each year, with a deposit fee of $15, a student health fee of $10 and a matriculation fee of $5. Total registration for 1934-1935 was 531; graduates, 134. The next session begins Sept. 23, 1935, and ends June 17, 1936. The Dean is William Pepper, M.D.

WOMAN'S MEDICAL COLLEGE OF PENNSYLVANIA, Henry Avenue and Abbottsford Road, East Falls.—Organized in 1850. Classes were graduated in 1852 and in all subsequent years except 1862. It has a faculty of 48 professors and 58 assistants, lecturers and others, in all, 106. Three years of collegiate work is required for admission. The curriculum covers four years of eight months each. Total fees for each of the four years are, respectively, $439, $433, $433 and $455. The total registration for 1934-1935 was 132; graduates, 32. The next session begins Sept. 25, 1935, and ends June 3, 1936. The Dean is Martha Tracy, M.D.

Pittsburgh

UNIVERSITY OF PITTSBURGH SCHOOL OF MEDICINE, Bigelow Boulevard.—Organized in 1886 as the Western Pennsylvania Medical College and in 1908 became an integral part of the University of Pittsburgh, removing to the university campus in 1910. The first class graduated in 1887. Coeducational since 1899. The faculty is composed of 22 professors and 268 associates, assistants and others, 290 in all. Entrance requirements are two years of collegiate work. The course of study is four years of eight and one-half months each. The total fees for the four years, respectively, are $500, $400, $400 and $415. The total registration for 1934-1935 was 263; graduates, 65. The next session begins Sept. 23, 1935, and ends June 10, 1936. The Dean is R. R. Huggins, M.D.

SOUTH CAROLINA

Charleston

MEDICAL COLLEGE OF THE STATE OF SOUTH CAROLINA, 16 Lucas Street.—Organized in 1823 as the Medical College of South Carolina. The first class graduated in 1825. In 1832 a medical college bearing the present title was chartered and the two schools continued as separate institutions until they were merged in 1838. Classes were graduated in all years except 1862 to 1865, inclusive. In 1913, by legislative enactment, it became a state institution. Coeducational from 1895 to 1912, when privileges for women were withdrawn, being restored in 1917. It has a faculty of 37 professors and 38 lecturers, instructors and others, a total of 75. The course covers four years of eight months each. Two years of collegiate work is required for admission. The total fees are $270, $270, $285 and $285 each year, respectively. Fees for nonresidents of the state, $420, $420, $435 and $435. Total enrolment for 1934-1935 was 162; graduates, 41. The next session begins Sept. 26, 1935, and ends June 4, 1936. The Dean is Robert Wilson, M.D.

SOUTH DAKOTA

Vermilion

UNIVERSITY OF SOUTH DAKOTA SCHOOL OF MEDICINE.—Organized in 1907. Coeducational since organization. Offers only the first two years of the medical course. Two years' work in a college of liberal arts is required for admission. The B.S. degree in medicine is conferred at the end of the second year. The faculty numbers 11. The fees are $100 each year for residents and $200 for nonresidents. The total registration for 1934-1935 was 53. The next session begins Sept. 18, 1935, and ends June 8, 1936. The Dean is J. C. Ohlmacher, M.D.

TENNESSEE

Memphis

UNIVERSITY OF TENNESSEE COLLEGE OF MEDICINE, 874 Union Avenue.—Organized in 1876 at Nashville as Nashville Medical College. First class graduated 1877, and a class graduated each subsequent year. Became Medical Department of University of Tennessee in 1879. In 1909 it united with the Medical Department of the University of Nashville to form the joint Medical Department of the Universities of Nashville and Tennessee. This union was dissolved in 1911. The trustees of the University of Nashville by formal action of that board named the University of Tennessee College of Medicine as its legal successor. In 1911 it moved to Memphis, where it united with the College of Physicians and Surgeons. The Memphis Hospital Medical College was merged in 1913. Lincoln Memorial University Medical Department was merged in 1914. Coeducational since 1911. The faculty includes 85 professors and 115 assistants, instructors and others, a total of 200. Two years of collegiate work is required for admission. The B.S. degree in medicine is conferred at the end of the second year. The fees are: for the first quarter, $136; second to sixth quarters, $116 each; seventh to ninth quarters, $111 each; tenth to twelfth quarters, $121 each. For residents of the state the charge is reduced $50 each quarter. Total registration for 1934-1935 was 429; graduates, 99. During the academic year 1935-1936 the quarters begin July 10, Sept. 26, Jan. 1 and March 19, and end Sept. 25, Dec. 14, March 18 and June 6. The Dean is O. W. Hyman, Ph.D.

Nashville

MEHARRY MEDICAL COLLEGE, Eighteenth Avenue North and Heffernan Street.—This school was organized in 1876 as the Meharry Medical Department of Central Tennessee College, which became Walden University in 1900. First class graduated in 1877. Obtained new charter independent of Walden University in 1915. Coeducational since 1876. The faculty is made up of 25 professors and 24 instructors, demonstrators, lecturers and others, 49 in all. Two years' work in a college of liberal arts is required for admission. The curriculum covers four years of thirty-two weeks each. Tuition fees are, respectively, $270, $250, $250 and $270 each year. Total registration for 1934-1935 was 189; graduates, 40. The next session begins Oct. 1, 1935, and ends May 28, 1936. The President is John Mullowney, M.D.

VANDERBILT UNIVERSITY SCHOOL OF MEDICINE, Twenty-First Street at Edgehill.—This school was founded in 1874. The first class graduated in 1875. Coeducational since September 1925. The faculty numbers 215. For matriculation, students must be seniors in absentia, who will receive the bachelor degree from their college after having completed successfully at least one year of work in the school of medicine. The course covers four years of nearly nine months each. The total fees for the four years, respectively, are $315, $315, $315 and $320. The total registration for 1934-1935 was 203; graduates, 51. The next session begins Sept. 25, 1935, and ends June 10, 1936. The Dean is Waller S. Leathers, M.D.

TEXAS

Dallas

BAYLOR UNIVERSITY COLLEGE OF MEDICINE, 810 College Avenue.—Organized in 1900 as the University of Dallas Medical Department. In 1903 it took its present name and became the Medical Department of Baylor University. It acquired the charter of Dallas Medical College in 1904. Coeducational since organization. The first class graduated in 1901. The faculty consists of 69 professors and 76 instructors and assistants, a total of 145. Entrance requirements are two years of collegiate work. The course covers four years of eight months each. The fees for each of the four years, respectively, are $364, $354, $349 and $374. Total registration for 1934-1935 was 376; graduates, 79. The next session begins Sept. 30, 1935, and ends June 1, 1936. The Dean is W. H. Moursund, M.D.

Galveston

UNIVERSITY OF TEXAS SCHOOL OF MEDICINE, 912 Avenue B.—Organized in 1891. The first class graduated in 1892. Coeducational since organization. It has a faculty of 42 professors and 15 lecturers and instructors, a total of 57. The curriculum covers four years of eight months each. The entrance requirement is two years of collegiate work. The B.S. degree in medicine is conferred at the end of the second year. The total fees for the four years, respectively, are $100, $102, $102 and $110. There is a matriculation fee of $50 for each year. Total registration for 1934-1935 was 359; graduates, 82. The next session begins Oct. 1, 1935, and ends May 30, 1936. The Dean is W. S. Carter, M.D.

UTAH

Salt Lake City

UNIVERSITY OF UTAH SCHOOL OF MEDICINE.—Organized in 1906. Coeducational since organization. Gives only first two years of medical course. Each school year covers thirty-six weeks. Three years of collegiate work is required for admission. The medical faculty consists of 7 professors and 16 lecturers and assistants, a total of 23. The fees are $190 for the first year and $200 for the second year. There is a nonresident fee of $35 for each year. Total registration for 1934-1935 was 60. The next session begins Sept. 26, 1935, and ends June 6, 1936. The Dean is L. L. Daines, M.D.

VERMONT

Burlington

UNIVERSITY OF VERMONT COLLEGE OF MEDICINE, Pearl Street, College Park.—Organized with complete course in 1822. Classes graduated in 1823 to 1836, inclusive, when the school was suspended. It was reorganized in 1853 and classes were graduated in 1854 and in all subsequent years. Coeducational since 1920. It has a faculty of 32 professors and 30 lecturers, instructors, preceptors and others, a total of 62. Two years of collegiate work is required for admission. The course of study covers four years of nine months each. For residents of Vermont the tuition fee is $300 each session. Nonresidents are charged an additional $75 each session. A student activity fee of $30 is charged all students not holding academic degrees or in attendance four years previously, and a $25 fee for the Doctor's degree. The total registration for 1934-1935 was 173; graduates, 35. The next session begins Sept. 19, 1935, and ends June 22, 1936. The Dean is J. N. Jenne, M.D.

VIRGINIA

Charlottesville

UNIVERSITY OF VIRGINIA DEPARTMENT OF MEDICINE.—Organized in 1827. Classes were graduated in 1828 and in all subsequent years except 1865. Coeducational since the session 1920-1921. It has a faculty of 32 professors and 35 lecturers, instructors, assistants and others, a total of 67. Two years of collegiate work is required for admission. The B.S. degree in medicine is conferred at the end of the second year. For residents of Virginia the total fees for the four years, respectively, are

$379, $356, $331 and $326. Nonresidents are charged an additional $50 each year. The total registration for 1934-1935 was 246; graduates, 54. The next session begins Sept. 12, 1935, and ends June 9, 1936. The Dean is J. Carroll Flippin, M.D.

Richmond

MEDICAL COLLEGE OF VIRGINIA, Twelfth and Clay Streets.—Organized in 1838 as the Medical Department of Hampden Sydney College. Present title was taken in 1854. In 1913 the University College of Medicine was merged. In 1914 the North Carolina Medical College was merged. Coeducational since 1918. Classes were graduated in 1839 and in all subsequent years. It has a faculty of 62 professors and 86 lecturers, instructors and others, a total of 148. Three years of collegiate work is required for admission. The course covers four years of eight and one-half months each. Total fees for the four years, respectively, are $304, $304, $289 and $319. Nonresidents are charged an additional $100 each year. The total registration for 1934-1935 was 332; graduates, 76. The next session begins Sept. 17, 1935, and ends June 2, 1936. The Dean is Lee E. Sutton Jr., M.D.

WEST VIRGINIA

Morgantown

WEST VIRGINIA UNIVERSITY SCHOOL OF MEDICINE.—Organized in 1902, gives the first two years of the medical course. Coeducational since organization. Two years of collegiate work is required for admission. The B.S. degree in medicine is conferred at the end of the second year. Session extends through nine months. Faculty numbers 24. Fees for residents of the state, $250; nonresidents, $400, each year. The total registration for 1934-1935 was 140. The next session begins Sept. 16, 1935, and ends June 9, 1936. The Acting Dean is Edward J. Van Liere, M.D.

WISCONSIN

Madison

UNIVERSITY OF WISCONSIN MEDICAL SCHOOL, 412 North Charter Street.—Organized in 1907. Gave only first two years of the medical course until 1925, when the clinical years were added. Coeducational since organization. Two years of collegiate work is required for admission. The B.S. degree in medicine is conferred at the end of the second year. It has a faculty of 64 professors and 67 lecturers, instructors and others, a total of 131. The fees for each year are, respectively, $212, $192, $165 and $110. An additional fee of $200 each year is charged nonresidents. The total registration for 1934-1935 was 317; graduates, 55. The next session begins Sept. 25, 1935, and ends June 22, 1936. The Dean is Wm. S. Middleton, M.D.

Milwaukee

MARQUETTE UNIVERSITY SCHOOL OF MEDICINE, 561 North Fifteenth Street.—Organized in December 1912, by the merger of the Milwaukee Medical College and the Wisconsin College of Physicians and Surgeons. Coeducational since organization. It has a faculty of 159. Two years of collegiate work is required for admission. The curriculum covers four years of eight and a half months each, and one year's internship in an approved hospital. The fees for the four years, respectively, are $391, $379, $379 and $364. The total registration for 1934-1935 was 312; graduates, 66. The next session begins Sept. 30, 1935, and ends June 17, 1936. The Dean is Eben J. Carey, M.D.

CANADA

Alberta

UNIVERSITY OF ALBERTA FACULTY OF MEDICINE, Edmonton.—Organized in 1913. Coeducational since organization. Has given the complete six-year medical course since 1924. The faculty includes 8 full time and 66 part time professors, instructors, assistants and others, a total of 74. Fees for the first year are $150, for the second, third and fourth years, $215; for the fifth and sixth years, $225. The registration for 1934-1935 was 197; graduates, 29. The next session beings Sept. 26, 1935, and ends April 30, 1936. The Dean is Allen Coats Rankin, M.D.

Manitoba

UNIVERSITY OF MANITOBA FACULTY OF MEDICINE, Corner of Emily and Bannatyne Avenues, Winnipeg.—Organized in 1883 as Manitoba Medical College; first class graduated in 1886, and a class graduated each subsequent year. The college transferred all its property to the University of Manitoba in 1919 and assumed the present title. Coeducational since organization. The faculty includes 31 professors, 79 instructors and assistants, total of 110. Matriculation requirements include two years of collegiate work in the faculty of arts and science of a recognized university. The course extends over four years of eight months each and a hospital internship. The total fees for the five years, respectively, are $270, $265, $275, $275 and $145. Total registration for 1934-1935 was 202; graduates, 44. The next session begins Sept. 20, 1935, and ends May 25, 1936. The Dean is A. T. Mathers, M.D.

Nova Scotia

DALHOUSIE UNIVERSITY FACULTY OF MEDICINE, Halifax.—Organized in 1867. Incorporated as the Halifax Medical College in 1875. Reorganized as an examining faculty, separate from the Halifax Medical College, in 1885. In 1911, in accordance with an agreement between the Governors of Dalhousie University and the Corporation of the Halifax Medical College, the work of the latter institution was discontinued and a full teaching faculty was established by the university. By an arrangement between Dalhousie University and the Provincial Medical Board of Nova Scotia, the final professional examinations are conducted conjointly by the university and the board, and candidates may qualify at the same time for their academic degrees and the provincial license. First class graduated in 1872. Coeducational since 1871. It has a faculty of 23 professors and 43 demonstrators, lecturers and others, a total of 66. Requires for matriculation two years of arts. The medical course covers four years and a hospital internship of one year. The fees are $312, $312, $312, $302 and $302 for each year, respectively; $200 additional registration fee payable by students outside the British Empire. The total registration for 1934-1935 was 151; graduates, 22. The next session begins Sept. 10, 1935, and ends May 12, 1936. The Dean is H. G. Grant, M.D.

Ontario

QUEEN'S UNIVERSITY FACULTY OF MEDICINE, Kingston.—Organized 1854, first class graduated in 1855, and a class graduated each subsequent year. The faculty was originally a department of the university, but a separation took place in 1866, when the school was conducted under the charter of the Royal College of Physicians and Surgeons at Kingston. It admitted women from 1880 until 1883. In 1892 the school again became a part of Queen's University. The faculty numbers 56. The fee for the first year is $175 and $220 for each of the other five years. There is an additional registration fee of $50 for students outside the British Empire. The course covers six years of thirty teaching weeks each. The total registration for 1934-1935 was 310; graduates, 48. The next session begins Sept. 26, 1935, and ends May 20, 1936. The Dean is Frederick Etherington, M.D.

UNIVERSITY OF WESTERN ONTARIO MEDICAL SCHOOL, Ottaway Avenue, London.—Organized in 1881 as the Western University Faculty of Medicine; first class graduated in 1883, and a class graduated each subsequent year. Present title in 1923. The medical school has been under the control of the Board of Governors of the University of Western Ontario since 1913. Coeducational since 1913. The faculty numbers 83. The course of study covers six years of eight months each. The total fees to residents of Canada for the last four years, respectively, are $225, $225, $233 and $258. The registration for 1934-1935 was 229; graduates, 34. The next session begins Sept. 23, 1935, and ends May 16, 1936. The Dean is F. J. H. Campbell, M.D.

UNIVERSITY OF TORONTO FACULTY OF MEDICINE, Toronto.—Organized in 1843 as the Medical Faculty of King's College. Abolished in 1853. Reestablished in 1887. In 1902 it absorbed Victoria University, Medical Department, and in 1903 it absorbed the Medical Faculty of Trinity University. Coeducational since 1903. The course of study covers six years of eight months each. The B.S. degree in medicine is conferred at the end of the third or sixth year. It has a faculty of 62 professors and 255 lecturers, associates and others, a total of 317. The fees are $195 for the first year; for the second, $370; $265 for the third year; $290 for the fourth and fifth years, and $322 for the sixth year. The total registration for 1934-1935 was 816; graduates, 110. The next session begins Sept. 24, 1935, and ends May 16, 1936. The Dean is J. G. FitzGerald, M.D.

Quebec

MCGILL UNIVERSITY FACULTY OF MEDICINE, 3640 University Street, Montreal.—Founded 1824 as Montreal Medical Institution; became the Medical Faculty of McGill University in 1829; first class graduated under the university auspices in 1833. No session between 1836-1839, owing to political troubles. In 1905 it absorbed the Faculty of Medicine of the University of Bishop College. Coeducational since 1919. Three years of collegiate work is required for admission. The length of the medical course is five years. The faculty consists of 62 professors and 152 lecturers and others, a total of 214. The total fees for each of the five medical years are $393. The total registration for 1934-1935 was 504; graduates, 103. The next session begins Sept. 18, 1935, and ends April 28, 1936. The Dean is Charles F. Martin, M.D.

UNIVERSITY OF MONTREAL, FACULTY OF MEDICINE, 1265 St. Denis Street, Montreal.—Organized in 1843, incorporated in 1845 as the Montreal School of Medicine and Surgery. In 1891, by act of Parliament, the Medical Faculty of Laval University (organized in 1878) was absorbed. Present name by act of Parliament in 1920. A class was graduated in 1843 and in each subsequent year. Coeducational since 1925. The faculty numbers 117. One year of premedical college work is required for admission to a five year medical course. The total fees for each of the five years, respectively, are $252, $229, $275, $243 and $218. The total registration for 1934-1935 was 184; graduates, 35. The next session begins Sept. 15, 1935, and ends June 15, 1936. The Dean is Télesphore Parizeau, M.D.

LAVAL UNIVERSITY FACULTY OF MEDICINE, Quebec.—The Quebec School of Medicine, organized in 1848, became in 1852 the Laval University Faculty of Medicine; first class graduated in 1855, and a class graduated each subsequent year. The faculty numbers 88. The fees for each of the medical years are $160, $170, $160, $160 and $180 for residents of Canada. Nonresidents are charged an extra fee of $190 each year. The premedical requirement is a B.A. degree. Total registration for 1934-1935 was 246; graduates, 32. The next session begins Sept. 10, 1935, and ends May 30, 1936. The Dean is P. C. Dagneau, M.D.

Saskatchewan

UNIVERSITY OF SASKATCHEWAN SCHOOL OF MEDICAL SCIENCES, Saskatoon.—Organized in 1926. Coeducational. Offers the first two years of the medical course. Students require three more years of medicine for graduation. Two years of collegiate work is required for admission. The B.S. degree in medicine is conferred at the end of the second year. The medical faculty includes 8 professors and 4 lecturers and assistants, a total of 12. The fees are $150 for each year. The total registration for 1934-1935 was 52. The next session begins Sept. 23, 1935, and ends May 8, 1936. The Dean is W. S. Lindsay, M.B.

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HOSPITALS APPROVED FOR INTERNSHIPS

By the Council on Medical Education and Hospitals of the American Medical Association, 535 North Dearborn Street, Chicago

Revised to Aug. 31, 1935

The following general hospitals containing 217,934 beds are considered in position to furnish acceptable internships for medical graduates.

HOSPITALS, 697. INTERNSHIPS, 6,443

The terms used in the column "Type of Internship" are defined as follows:

1. Rotating internships include services in medicine, surgery, pediatrics, obstetrics and in the clinical and x-ray laboratories.
2. Straight internships are limited to a single field.
3. Mixed internships are those comprising more than one service but which do not include all of the six branches which constitute a rotating internship.

ABBREVIATIONS:

Army	United States Army	Fed	Federal	Part	Partnership
CyCo	City and County	Frat	Fraternal	Req	Required
Corp	Corporation unrestricted as to profit	Indiv	Individual	USPHS	United States Public Health Service
		NPAssn	Nonprofit association		
		Op	Optional		

Name of Hospital	Location	Control	Classification of Patients: Percentage: Capacity	Free and Part Pay	Full Pay	Total Patients Treated	Type of Internship	Number of Interns	Length of Service in Months	Service Commences	Affiliated Service	Outpatient Service	Autopsy Percentage	Salary per Month
ALABAMA														
Hillman Hospital	Birmingham	County	479	100		11,178	Mixed	16	12	July	No	Req	28	No
Norwood Hospital	Birmingham	Corp	226	78	22	3,494	Rotating	2	12	July	No	Req	18	$25
Employees' Hospital of the Tennessee Coal, Iron and Railroad Company	Fairfield	Corp	310		100	6,336	Rotating	8	12	July	No	Req	47	$25
John A. Andrew Memorial Hosp.[1] (col.)	Tuskegee Institute	NPAssn	79	90	10	2,650	Rotating	3	12	June & Sept.	No	Req	49	$36
ARIZONA														
St. Joseph's Hospital	Phoenix	Church	188	27	73	5,215	Rotating	4	12	July	No	None	24	$25
ARKANSAS														
Baptist State Hospital	Little Rock	Church	315	29	71	3,040	Rotating	4	12	July	No	None	17	$25
Little Rock City Hospital	Little Rock	City	140	100		1,660	Rotating	5	12	July	No	Req	44	$33
St. Vincent Infirmary	Little Rock	Church	150	41	59	3,562	Rotating	4	12	June	No	None	17	$25
CALIFORNIA														
Fresno County General Hospital	Fresno	County	528	100		6,769	Mixed	10	12	July	No	Req	43	$25
Glendale Sanitarium and Hospital[1]	Glendale	Church	254	21	79	2,343	Mixed	4	12	July	No	Op	33	$32.50(a)
Loma Linda Sanitarium and Hospital	Loma Linda	Church	124	..	..	2,076	Mixed	4	12	July	(3)	Req	28	$55(a)
California Hospital	Los Angeles	Church	307	..	..	6,415	Rotating	8	12	July	(4)	Op	27	$25
Cedars of Lebanon Hospital	Los Angeles	NPAssn	288	23	77	6,895	Rotating	9	12	June	No	Req	42	$25
Hollywood Clara Barton Mem. Hosp.	Los Angeles	Corp	274		100	7,115	Mixed	4	12	July	No	None	42	$25
Los Angeles County Hospital[1]	Los Angeles	County	3,410	100		60,284	Mixed	125	12	(1-a)	No	Req	59	No
St. Vincent's Hospital	Los Angeles	Church	240	9	91	4,409	Mixed	3	12	July	No	None	46	$40
Santa Fe Coast Lines Hospital	Los Angeles	NPAssn	150	..	..	1,974	Rotating	5	12	July	(5)	Req	72	$23.75
White Memorial Hospital[1]	Los Angeles	Church	134	69	31	5,105	Rotating	10	12	July	(6)	Req	33	$40(a)
Alameda County Hospitals	Oakland	County	1,478	100		10,070	Rotating	24	12	July	(7)	None	38	$25
Orange County Hospital	Orange	County	203	100		3,190	Rotating	8	12	July	No	Req	52	$15-20
Pasadena Hospital	Pasadena	NPAssn	210	20	80	4,062	Rotating	4	12	July	(8)	Req	59	$30
Sacramento County Hospital	Sacramento	County	425	100		7,509	Rotating	10	12	July	No	Req	47	$35
San Bernardino County Charity Hosp.	San Bernardino	County	328	100		3,651	Rotating	8	12	July	(3)	Req	44	$25
San Diego County General Hospital	San Diego	County	672	100		8,207	Rotating	13	12	July	No	Req	45	$15-20
French Hospital	San Francisco	Frat	246	69	31	3,453	Mixed	6	12	July	No	Req	44	$30(b)
Hospital for Children[2]	San Francisco	NPAssn	259	32	68	4,421	Rotating	10	12	July	No	Req	31	No
Letterman General Hospital	San Francisco	Army	610	100		5,114	Rotating	4	12	July	No	Req	65	(d)
Mary's Help Hospital	San Francisco	Church	150	32	68	3,781	Rotating	5	12	July	No	Req	39	$25
Mount Zion Hospital[1]	San Francisco	NPAssn	189	33	67	4,046	Rotating	6	12	June	No	Req	47	$15
St. Joseph's Hospital	San Francisco	Church	243	..	..	4,737	Mixed	4	12	July	No	None	18	$25
St. Luke's Hospital	San Francisco	Church	225	19	81	4,571	Rotating	4	12	July	No	Op	26	$15(c)
San Francisco Hospital[1]	San Francisco	CyCo	1,451	100		13,514	Rotating	45	12	July	(9)	Op	41	$10
Southern Pacific General Hospital	San Francisco	NPAssn	400	..	..	4,457	Rotating	14	12	July	(10)	Req	69	$30
Stanford University Hospitals[1] (Including Lane Hospital)	San Francisco	NPAssn	223	51	49	8,773	Straight	13	12	July	No	Req	43	No
U. S. Marine Hospital	San Francisco	USPHS	493	100		4,204	Rotating	11	12	July	(11)	Op	28	(d)
University of California Hospital[1]	San Francisco	State	281	68	32	5,725	Straight	20	12	June	No	Req	76	No
St. Helena Sanitarium and Hospital[1]	Sanitarium	Church	146	..	..	1,854	Mixed	2	12	July	(12)	None	34	$50(a)
Santa Clara County Hospital	San Jose	County	497	100		5,900	Rotating	9	12	July	No	Req	50	(e)
St. Francis Hospital	Santa Barbara	Church	100	27	73	1,782	Mixed	2	12	July	(13)	Req	29	$20
Santa Barbara Cottage Hospital	Santa Barbara	NPAssn	282	..	..	2,985	Rotating	5	12	July	(13)	Req	59	$20
Santa Barbara General Hospital	Santa Barbara	County	225	100		2,050	Rotating	5	12	July	(14)	None	54	$15
COLORADO														
Boulder-Colorado Sanit. and Hosp.[1]	Boulder	Church	107	..	..	1,204	Mixed	1	12	July	No	Req	15	$35
Beth-El General Hospital	Colorado Springs	Church	104	21	79	2,802	Rotating	2	12	June	No	Req	27	No
St. Francis Hospital and Sanitarium	Colorado Springs	Church	146	61	39	1,019	Mixed	1	12	July	No	None	18	$25
Colorado General Hospital[1]	Denver	State	178	100		3,462	Rotating	10	12	July & Aug.	No	Req	79	$20
Denver General Hospital	Denver	CyCo	589	100		17,182	Rotating	15	18	Jan. & July	No	Req	28	$30
Fitzsimons General Hospital	Denver	Army	1,191	100		5,456	Rotating	2	12	July	(15)	Op	69	(d)
Mercy Hospital	Denver	Church	225	..	..	4,356	Mixed	4	12	July	No	None	28	$25
Presbyterian Hospital	Denver	Church	175	9	91	3,632	Mixed	4	12	July	No	None	29	$25
St. Anthony's Hospital	Denver	Church	228	87	13	5,726	Rotating	4	12	July	No	Req	20	$25
St. Joseph's Hospital	Denver	Church	225	62	38	4,761	Rotating	4	12	July	(16)	None	27	$30
St. Luke's Hospital	Denver	Church	240	52	48	5,221	Rotating	6	12	July	No	Req	35	$25
St. Mary Hospital	Pueblo	Church	162	41	59	2,384	Mixed	2	12	July	No	None	17	(x)
CONNECTICUT														
Bridgeport Hospital	Bridgeport	NPAssn	400	51	49	9,817	Rotating	9	12	July	No	None	27	No
St. Vincent's Hospital	Bridgeport	Church	251	87	13	5,517	Rotating	6	12	July	No	Req	22	$200 yr.
Danbury Hospital	Danbury	NPAssn	155	81	19	2,740	Mixed	2	12	July	No	None	26	$40
Hartford Hospital	Hartford	Corp	780	56	44	14,878	Rotating	24	24	Jan. & July	(17)	None	47	(f)
Municipal Hospitals	Hartford	City	335	100		5,082	Rotating	10	24	July	No	Req	50	No
St. Francis Hospital	Hartford	Church	325	50	50	9,052	Rotating	9	12	July & Aug.	No	Req	20	No
Meriden Hospital	Meriden	NPAssn	136	57	43	3,234	Rotating	4	12	July	No	Req	25	$15(g)
Middlesex Hospital	Middletown	NPAssn	160	48	52	5,245	Rotating	3	12	May & July	No	None	18	$10(h)

Numerical and other references will be found on pages 707 and 708.

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Name of Hospital	Location	Control	Classification of Patients Percentage: Capacity	Free and Part Pay	Pull Pay	Total Patients Treated	Type of Internship	Number of Interns	Length of Service in Months	Service Commences	Affiliated Service	Outpatient Service	Autopsy Percentage	Salary per Month
CONNECTICUT—Continued														
New Britain General Hospital	New Britain	NPAssn	241	84	16	4,372	Rotating	5	12	July	No	Op	19	$30
Grace Hospital	New Haven	NPAssn	286	53	47	6,012	Rotating	9	18	Jan. & July	No	Req	33	$10
Hospital of St. Raphael	New Haven	Church	250	80	20	5,633	Rotating	6	12	July	No	Req	21	$20
New Haven Hospital [1]	New Haven	NPAssn	439	77	23	8,073	Straight	31	12-20	(1-b)	No	Req	48	No
Lawrence and Memorial Associated Hospitals	New London	NPAssn	235	45	55	3,139	Rotating	3	12	July	No	Req	26	$22.50
Norwalk General Hospital	Norwalk	NPAssn	165	73	27	3,145	Mixed	3	12	Jan. & July	No	None	24	$50
William W. Backus Hospital	Norwich	NPAssn	155	93	7	2,539	Rotating	2	12	July	No	Req	27	No
Stamford Hospital	Stamford	Corp	260	73	27	5,709	Rotating	6	12	Jan. & July	No	Req	27	$45
St. Mary's Hospital	Waterbury	Church	364	80	20	7,736	Rotating	4	12	July	No	Req	35	$25
Waterbury Hospital	Waterbury	NPAssn	357	92	8	5,413	Rotating	7	12	July & Oct.	No	Req	38	$25
DELAWARE														
Delaware Hospital	Wilmington	Corp	200	64	36	4,137	Rotating	6	12	July	No	Req	20	$25
Wilmington General Hospital	Wilmington	NPAssn	133	50	50	2,715	Mixed	3	12	July	No	Req	25	$40(l)
DISTRICT OF COLUMBIA														
Central Disp. and Emergency Hospital	Washington	NPAssn	270	43	57	7,157	Mixed	12	12	July	(18)	Req	31	$10
Freedmen's Hospital [1] (col.)	Washington	Fed	374	87	13	5,271	Rotating	24	12	July & Oct.	No	Req	31	$8.50
Gallinger Municipal Hospital [1]	Washington	City	754	100		18,208	Rotating	24	12	July	No	None	40	$13
Garfield Memorial Hospital [1]	Washington	Corp	311	42	58	5,848	Mixed	9	12	July	No	Req	30	$10(h)
Georgetown University Hospital	Washington	NPAssn	264	41	59	4,487	Rotating	7	12	July	(19)	Req	27	$10
George Washington University Hosp. [1]	Washington	NPAssn	114	21	79	2,448	Mixed	4	12	July	No	Req	40	$15
Providence Hospital	Washington	Church	265	..	..	4,511	Rotating	6	12	July	No	Req	21	$10
St. Elizabeths Hospital Medical and Surgical Department [1]	Washington	Fed	450	..	..	1,389	Rotating	8	24	July & Oct.	(20)	Req	73	$136.66
Sibley Memorial Hospital	Washington	Church	310	..	..	7,912	Rotating	7	12	July	No	Op	28	$20
Walter Reed General Hospital	Washington	Army	1,152	100		8,966	Rotating	..	12	July	....	....	75	(d)
Washington Sanitarium and Hospital, [1] Takoma Park	Washington	Church	180	37	63	2,229	Mixed	2	12	July	No	Req	24	$60(a)
FLORIDA														
Duval County Hospital	Jacksonville	County	185	100		3,476	Rotating	8	24	July	No	Req	35	$15-30
James M. Jackson Memorial Hospital	Miami	City	350	61	39	9,720	Rotating	10	12	July	No	Req	16	$25
Tampa Municipal Hospital	Tampa	City	194	43	57	5,249	Rotating	6	12	July & Oct.	No	Req	21	$25
GEORGIA														
Georgia Baptist Hospital	Atlanta	Church	150	16	84	5,739	Mixed	5	12	July	(21)	Op	17	$30
Grady Hospital (White Unit)	Atlanta	City	364	100		10,722	Rotating	24	12	July	No	Req	22	$15
Grady Hospital, Emory University Division (Colored Unit)	Atlanta	City	203	100		8,648	Rotating	12	12	July	No	Req	22	$15
Piedmont Hospital	Atlanta	Corp	135		100	2,684	Rotating	4	12	July	No	None	29	$25
University Hospital [1]	Augusta	City	270	56	44	7,102	Rotating	10	12	July	No	Req	30	$10(j)
Emory University Hospital	Emory University	NPAssn	166	19	81	3,183	Rotating	6	12	July	(22)	None	25	$30
Macon Hospital	Macon	CyCo	155	82	18	5,616	Rotating	8	12	July	No	Req	18	$30(m)
ILLINOIS														
Alexian Bros. Hosp. (male patients only)	Chicago	Church	256	51	49	2,890	Rotating	7	12	July	(23)	None	22	$40
American Hospital [1]	Chicago	NPAssn	170	18	82	1,938	Rotating	4	12	June	No	None	38	No
Augustana Hospital	Chicago	Church	375	43	57	4,731	Rotating	10	18	Jan. & July	No	None	33	No
Chicago Memorial Hospital	Chicago	NPAssn	108	90	10	2,455	Rotating	4	12	July	No	Req	51	No
Columbus Hospital	Chicago	Church	182	89	11	3,117	Rotating	4	12	July	No	None	64	$25
Edgewater Hospital	Chicago	Corp	140	..	..	3,154	Rotating	5	12	June	No	None	28	$10
Englewood Hospital	Chicago	NPAssn	133	64	36	2,844	Rotating	4	12	Jan. & July	No	Req	18	$20
Evangelical Hospital	Chicago	Church	200	25	75	5,769	Mixed	6	12	July	No	None	19	$25
Frances E. Willard Hospital [1]	Chicago	NPAssn	140	99	1	3,626	Rotating	6	12	Jan. & July	No	None	33	No
Garfield Park Community Hospital	Chicago	NPAssn	142	30	70	4,647	Mixed	6	12	July	No	Req	19	No
Grant Hospital	Chicago	NPAssn	271	27	73	5,141	Rotating	7	12	July	No	Req	21	No
Holy Cross Hospital	Chicago	Church	109	25	75	3,703	Rotating	3	12	June	No	None	16	$10
Hospital of St. Anthony de Padua	Chicago	Church	240	11	89	4,615	Rotating	6	18	(1-e)	No	None	21	$10
Illinois Central Hospital	Chicago	Corp	276	36	64	4,163	Rotating	8	12	(1-e)	No	Req	23	No
Illinois Masonic Hospital	Chicago	Frat	184	15	85	2,234	Rotating	6	12	July	No	Req	33	No
Jackson Park Hospital	Chicago	NPAssn	258	8	92	3,647	Rotating	10	12&18	Feb. & July	No	Req	32	$10
Lake View Hospital	Chicago	Corp	140	14	86	2,026	Rotating	3	12	July	No	Req	20	$25
Lutheran Deaconess Home and Hospital	Chicago	Church	316	19	81	3,977	Mixed	5	12	July	No	None	22	$15
Lutheran Memorial Hospital	Chicago	Church	211	10	90	3,038	Mixed	4	12	July	No	None	16	$10
Mercy Hospital	Chicago	Church	380	41	59	5,324	Mixed	12	12	July	No	Req	20	No
Michael Reese Hospital [1]	Chicago	NPAssn	629	81	19	14,087	Rotating	34	12&24	Jan. & July	(24)	Op	47	No
Mother Cabrini Memorial Hospital	Chicago	Church	168	93	7	2,848	Rotating	4	12	July	No	None	29	$25
Mount Sinai Hospital [1]	Chicago	NPAssn	204	38	62	5,080	Rotating	12	24	July	(24)	Req	38	$20
Norwegian-American Hospital	Chicago	NPAssn	180	9	91	3,370	Rotating	6	12	Apr. & July	No	Req	39	$20
Passavant Memorial Hospital	Chicago	NPAssn	348	7	93	4,285	Rotating	6	12	(1-d)	No	None	64	No
Presbyterian Hospital	Chicago	Church	462	72	28	10,567	Mix. &Str.	26	12&16	(1-e)	No	Op	58	No
Provident Hospital [1] (col.)	Chicago	NPAssn	255	64	36	2,894	Rotating	6	12-16	(1-e)	No	Req	34	No
Ravenswood Hospital	Chicago	NPAssn	198	23	77	5,215	Rotating	6	12	July	No	Req	24	No
Research and Educational Hospital [1]	Chicago	State	382	100		6,342	Rotating	12	18	Jan. & July	No	Op	91	No
Roseland Community Hospital	Chicago	Corp	135	27	73	2,832	Rotating	4	12	July	No	Req	17	$15
St. Anne's Hospital	Chicago	Church	295	64	36	5,324	Rotating	7	12	June	No	None	20	No
St. Bernard's Hospital	Chicago	Church	230	33	67	5,401	Rotating	6	12	July	No	None	28	No
St. Joseph Hospital	Chicago	Church	185	29	71	3,286	Rotating	7	12	Apr. & July	No	Req	22	No
St. Luke's Hospital	Chicago	NPAssn	659	24	76	10,444	Rotating	24	12	(1-f)	No	Req	40	No
St. Mary of Nazareth Hospital	Chicago	Church	200	13	87	4,518	Rotating	6	12	July	No	None	28	No
Swedish Covenant Hospital	Chicago	Church	209	34	66	3,406	Rotating	5	12	Apr. & July	No	Req	32	$10
U. S. Marine Hospital	Chicago	USPHS	186	100		1,770	Mixed	4	12	July	No	Op	28	(d)
University Hospital	Chicago	Corp	121	12	88	1,734	Rotating	4	12	(1-f)	No	Req	26	$15
University of Chicago Clinics [1]	Chicago	NPAssn	262	95	5	6,735	Straight	30	12	Jan. & July	(25)	Req	70	No
Washington Boulevard Hospital	Chicago	NPAssn	110	..	..	1,717	Rotating	6	18	(1-g)	No	None	18	No
Wesley Memorial Hospital [1]	Chicago	Church	250	36	64	3,885	Rotating	8	12	Jan. & July	No	None	43	No
Women and Children's Hospital [2]	Chicago	NPAssn	125	60	40	3,175	Rotating	6	12	Jan. & July	No	Req	53	No
Woodlawn Hospital	Chicago	NPAssn	174	65	35	2,940	Rotating	4	12	Jan. & July	No	None	36	No
St. Mary's Hospital	East St. Louis	Church	295	53	47	5,980	Rotating	5	12	July	No	None	15	$25
Evanston Hospital	Evanston	NPAssn	271	61	39	5,974	Rotating	12	12	(1-e)	No	Req	72	No
St. Francis Hospital	Evanston	Church	370	64	36	5,759	Rotating	8	12	July	No	None	33	$25
Little Company of Mary Hospital	Evergreen Park	Church	174	55	45	3,169	Rotating	3	12	Jan. & July	No	Op	24	$25
St. Joseph Hospital	Joliet	Church	258	48	52	4,100	Rotating	3	12	Jan. & July	No	None	16	$25
Oak Park Hospital	Oak Park	Church	165	35	65	3,696	Rotating	6	12	July	No	Op	25	No
West Suburban Hospital	Oak Park	NPAssn	427	..	..	6,362	Rotating	10	12	July & Oct.	No	Req	35	No
St Francis Hospital	Peoria	Church	330	32	68	6,783	Rotating	4	12	July	(26)	None	22	$20
St. Mary Hospital	Quincy	Church	215	87	13	3,511	Rotating	2	12	July	No	None	16	$25
St. Anthony's Hospital	Rock Island	Church	168	60	40	3,054	Mixed	2	12	July	No	Op	21	$25

Numerical and other references will be found on pages 707 and 708.

Name of Hospital	Location	Control	Capacity	Classification of Patients Percentage: Free and Part Pay	Classification of Patients Percentage: Full Pay	Total Patients Treated	Type of Internship	Number of Interns	Length of Service in Months	Service Commences	Affiliated Service	Outpatient Service	Autopsy Percentage	Salary per Month
INDIANA														
St. Catherine's Hospital	East Chicago	Church	350	25	75	3,716	Rotating	6	12	June & July	No	None	24	$25
Lutheran Hospital	Fort Wayne	Church	168	30	70	2,980	Mixed	2	12	July	No	None	23	$25(n)
St. Joseph Hospital	Fort Wayne	Church	300	41	59	4,721	Rotating	4	12	July	No	None	22	$25
St. Mary's Mercy Hospital	Gary	Church	270	42	58	5,066	Rotating	5	12	June & July	No	Req	16	$25
St. Margaret's Hospital	Hammond	Church	250	82	18	3,269	Rotating	8	12	(1-h)	No	Req	19	$25
Indianapolis City Hospital	Indianapolis	City	572	99	1	10,575	Mixed	32	12	July	No	Req	43	$10
Indiana University Hospitals [1]	Indianapolis	State	480	83	17	8,688	Rotating	21	12	July	(27)	Req	48	$12.50
Methodist Episcopal Hospital	Indianapolis	Church	600	..	..	14,228	Rotating	18	12	July	No	Op	28	$10
St. Vincent's Hospital	Indianapolis	Church	295	31	69	5,180	Rotating	7	12	July	No	None	21	$15
St. Elizabeth Hospital	La Fayette	Church	245	92	8	4,710	Rotating	4	12	July	No	Op	18	$25
Ball Memorial Hospital [1]	Muncie	NPAssn	162	24	76	2,788	Mixed	3	12	July	No	None	29	$15(h)
Epworth Hospital	South Bend	NPAssn	187	36	64	2,569	Rotating	3	12	July	No	Req	21	$35
St. Joseph Hospital	South Bend	Church	147	43	57	2,251	Rotating	2	12	July	No	Req	34	$25(n)
IOWA														
Mercy Hospital	Cedar Rapids	Church	175	37	63	2,373	Mixed	2	12	July	No	Req	22	$25
Jennie Edmundson Memorial Hospital	Council Bluffs	NPAssn	139		100	1,790	Rotating	3	12	June	No	Req	27	$30
Mercy Hospital	Council Bluffs	Church	147	..	..	2,503	Rotating	3	12	June	No	None	22	$25
Mercy Hospital	Davenport	Church	145	45	55	2,864	Rotating	2	12	July	No	None	19	$25
Broadlawns-Polk Co. Public Hospital	Des Moines	County	112	100		4,021	Rotating	6	12	July	(28)	Req	64	$25
Iowa Lutheran Hospital	Des Moines	Church	160	..	..	3,189	Rotating	3	12	July	No	None	24	$30
Iowa Methodist Hospital	Des Moines	Church	279	5	95	5,987	Rotating	6	12	July	No	Req	29	$20
Mercy Hospital	Des Moines	Church	176	..	..	3,301	Rotating	4	12	July	No	None	23	$35
University Hospitals [1]	Iowa City	State	954	92	8	15,783	Rotating	19	12	July	No	Req	50	(h)
St. Joseph Mercy Hospital	Sioux City	Church	229	13	87	4,085	Rotating	4	12	July	No	None	46	$25
KANSAS														
Bell Memorial Hospital [1]	Kansas City	State	250	89	11	5,300	Rotating	8	12	July	(29)	Req	78	$15
Bethany Methodist Hospital	Kansas City	Church	145	17	83	2,571	Rotating	3	12	July	No	None	47	$25
St. Margaret Hospital	Kansas City	Church	265	91		3,455	Rotating	5	12	July	No	Req	32	$25
St. Francis Hospital	Wichita	Church	350	45	55	4,780	Rotating	5	12	July	(30)	Req	26	$40
Wesley Hospital	Wichita	Church	226	..	..	3,928	Mixed	6	12	July	(31)	None	20	$25
Wichita Hospital	Wichita	Church	119	46	54	2,056	Mixed	3	12	July	(30)	Req	15	$50
KENTUCKY														
St. Elizabeth Hospital	Covington	Church	290	82	18	4,895	Mixed	6	12	July	No	Req	15	$25
Good Samaritan Hospital	Lexington	Church	216	34	66	4,830	Rotating	3	12	July	No	Req	23	$25
St. Joseph's Hospital	Lexington	Church	210	39	61	5,109	Mixed	4	24	July	No	None	28	$25(h)
Kentucky Baptist Hospital	Louisville	Church	150	..	..	3,106	Mixed	2	12	July	No	None	22	$25
Louisville City Hospital [1]	Louisville	City	586	100		11,907	Rotating	18	12	July	(32)	Req	32	80
Norton Memorial Infirmary	Louisville	NPAssn	139	67	33	2,855	Rotating	6	12	July	(33)	Req	42	$10
St. Anthony's Hospital	Louisville	Church	157	68	32	2,415	Mixed	3	12	July	No	Op	18	$25
St. Joseph Infirmary	Louisville	Church	350	43	57	5,340	Mixed	2	12	July	No	None	19	$25
SS. Mary and Elizabeth Hospital	Louisville	Church	154	..	..	2,769	Mixed	2	12	July	No	None	18	$40
LOUISIANA														
Charity Hospital [1]	New Orleans	State	1,913	100		55,437	Rotat&Str	57	12	July	No	Req	58	$8-10
Flint Goodridge Hospital of Dillard University [1] (col.)	New Orleans	NPAssn	100	65	35	1,287	Rotating	3	12	July	No	Req	37	$10
Hotel Dieu Hospital	New Orleans	Church	263	21	79	6,046	Rotating	7	12	July	No	None	27	$25
Mercy Hospital-Sonint Memorial	New Orleans	Church	153	19	81	2,668	Rotating	5	12	July	No	Req	20	$25
Southern Baptist Hospital [1]	New Orleans	Church	250	50	50	6,574	Mixed	9	12	July	No	None	23	$15
Touro Infirmary [1]	New Orleans	NPAssn	366	68	32	8,292	Rotating	16	12	July	No	Req	38	$10
U. S. Marine Hospital	New Orleans	USPHS	572	100		3,424	Rotating	11	12	July	(34)	Op	70	(d)
T. E. Schumpert Memorial Hospital	Shreveport	Church	162	75	25	2,957	Mixed	1	12	July	No	Op	16	$30
Shreveport Charity Hospital	Shreveport	State	524	100		14,107	Mixed	15	12	July	No	None	65	$10
MAINE														
Eastern Maine General Hospital	Bangor	NPAssn	173	42	58	3,621	Mixed	3	12	July	No	Req	19	$25
Central Maine General Hospital	Lewiston	NPAssn	185	38	62	3,259	Rotating	3	12	July	No	None	34	No
St. Mary's General Hospital	Lewiston	Church	162	36	64	2,571	Mixed	2	12	July	No	Req	42	$30
Maine General Hospital	Portland	NPAssn	261	76	24	5,633	Mixed	6	12	Apr. & July	No	Req	22	No
MARYLAND														
Baltimore City Hospitals [1]	Baltimore	City	1,230	100		6,360	Mix.&Str.	18	12	July	No	Req	33	No
Ben Secours Hospital	Baltimore	Church	135	50	50	2,128	Rotating	3	12	July	(35)	Req	66	$25
Church Home and Infirmary [1]	Baltimore	Church	184	82	18	2,894	Rotating	7	12	July	No	Req	42	$15
Franklin Square Hospital	Baltimore	NPAssn	129	76	24	2,047	Mixed	3	12	July	No	None	17	$12.50(o)
Hospital for Women [2]	Baltimore	NPAssn	332	70	30	2,273	Mixed	5	12	July	(36)	Op	28	No
Johns Hopkins Hospital [1]	Baltimore	NPAssn	860	76	24	13,341	Straight	62	12	July & Sept.	No	Req	79	No
Maryland General Hospital	Baltimore	Church	220	49	51	4,551	Rotating	9	12	July	No	Req	16	$10
Mercy Hospital	Baltimore	Church	290	64	36	5,379	Rotating	9	12	July	No	Op	27	No
Provident Hosp. and Free Disp. (col.)	Baltimore	NPAssn	129	90	10	1,927	Rotating	8	12	July & Oct.	No	Req	17	No
St. Agnes Hospital	Baltimore	Church	223	69	31	3,698	Rotating	5	12	July	(35)	Req	26	No
St. Joseph's Hospital	Baltimore	Church	290	58	42	5,289	Rotating	6	12	July	No	Req	40	$15
Sinai Hospital [1]	Baltimore	NPAssn	239	48	52	5,058	Straight	22	12	July	No	Req	28	No
South Baltimore General Hospital	Baltimore	NPAssn	115	73	27	2,659	Rotating	7	12	July	No	Req	16	$20
Union Memorial Hospital	Baltimore	NPAssn	336	69	31	5,227	Mixed	15	12	July	No	Req	38	No
U. S. Marine Hospital	Baltimore	USPHS	278	100		2,213	Rotating	6	12	July	(37)	Req	49	(d)
University Hospital [1]	Baltimore	State	450	80	20	5,137	Rotating	14	12	July	No	Req	37	No
West Baltimore General Hospital	Baltimore	NPAssn	200	34	66	2,448	Rotating	5	12	July	(38)	Req	19	$15
MASSACHUSETTS														
Beverly Hospital	Beverly	NPAssn	141	53	47	4,102	Rotating	3	12	(1-l)	No	Req	46	$25
Beth Israel Hospital	Boston	NPAssn	215	..	..	5,135	Straight	11	15½&24½	(1-j)	No	Req	53	No
Boston City Hospital [1]	Boston	City	1,762	99	1	44,553	Straight	91	12-24	Varies	(39)	Req	24	No
Carney Hospital	Boston	Church	188	92	8	2,956	Mixed	12	16	(1-k)	No	Req	18	No
Faulkner Hospital	Boston	NPAssn	150	78	22	3,323	Mixed	2	12	June	No	Req	45	No
Long Island Hospital [2]	Boston	City	471	100		2,359	Rotating	6	12	July	No	None	42	$50
Massachusetts General Hospital	Boston	NPAssn	416	86	14	8,351	Straight	28	12-25	(1-e)	No	Req	59	No
Massachusetts Memorial Hospitals [1]	Boston	NPAssn	367	66	34	5,930	Rotating	12	12	Aug.	No	Req	41	No
New England Hospital for Women and Children [2]	Roxbury	Boston	NPAssn	260	9	91	4,131	Rotating	8	12	July & Oct.	No	Req	32	No
Peter Bent Brigham Hospital	Boston	NPAssn	246	61	39	4,373	Straight	24	12&16½	(1-m)	(40)	Req	75	No
St. Elizabeth's Hospital, Brighton	Boston	Church	300	37	63	4,129	Mixed	7	24	(1-c)	No	Req	16	No
Brockton Hospital	Brockton	NPAssn	138	70	30	2,618	Rotating	3	12	June & Aug.	No	Req	17	$10(h)
Cambridge Hospital	Cambridge	NPAssn	307	84	16	5,687	Rotating	4	18	(1-e)	(41)	Req	25	No
Union Hospital	Fall River	NPAssn	180	17	83	3,285	Mixed	2	12	July	No	Req	17	$30-50
Burbank Hospital	Fitchburg	NPAssn	211	89	11	3,811	Mixed	4	12	(1-c)	No	Req	27	$50

Numerical and other references will be found on pages 707 and 708.

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Name of Hospital	Location	Control	Capacity	Classification of Patients Percentage: Free and Part Pay	Classification of Patients Percentage: Full Pay	Total Patients Treated	Type of Internship	Number of Interns	Length of Service in Months	Service Commences	Affiliated Service	Outpatient Service	Autopsy Percentage	Salary per Month
MASSACHUSETTS—Continued														
Providence Hospital	Holyoke	Church	140	..	..	4,556	Mixed	2	12	June	No	None	30	$25
Lawrence General Hospital	Lawrence	NPAssn	152	32	68	3,128	Mixed	2	12	June	No	Req	28	$10
Lowell General Hospital	Lowell	NPAssn	180	55	45	3,487	Mixed	2	12	July	No	Req	30	$25
St. John's Hospital	Lowell	Church	168	63	37	3,206	Mixed	4	12	June	No	Req	23	No
St. Joseph's Hospital	Lowell	Church	111	49	51	3,326	Mixed	2	12	July	No	Req	35	$10
Lynn Hospital	Lynn	NPAssn	265	47	53	4,576	Mixed	3	12	June & July	No	Req	17	$10(g)
St. Luke's Hospital	New Bedford	NPAssn	330	55	45	4,939	Rotating	6	12	July	No	Req	17	No
Newton Hospital	Newton	NPAssn	200	68	32	5,125	Rotating	6	12	June	No	Req	29	No
House of Mercy Hospital	Pittsfield	NPAssn	222	95	5	2,887	Mixed	2	12	July	No	Op	15	$40
St. Luke's Hospital	Pittsfield	Church	189	34	66	2,131	Mixed	2	12	May	No	Req	22	$25
Quincy City Hospital	Quincy	City	209	17	83	5,738	Rotating	6	12	Jan. & July	No	Op	28	No
Salem Hospital	Salem	NPAssn	180	67	33	3,819	Rotating	3	12	July & Aug.	No	Req	25	$25
Mercy Hospital	Springfield	Church	380	20	80	6,918	Rotating	7	12	July	(127)	Req	24	$25
Springfield Hospital	Springfield	NPAssn	265	84	16	5,088	Rotating	9	18	Jan. & July	(42)	Req	19	No
State Infirmary [1]	Tewksbury	State	1,759	100		4,128	Mixed	4	12	July	No	None	15	No
Waltham Hospital	Waltham	NPAssn	216	7	93	2,918	Rotating	3	12	(1-n)	No	Req	31	$15(l)
Memorial Hospital	Worcester	NPAssn	215	23	77	5,004	Rotating	9	18	(1-e)	No	Req	40	No
St. Vincent Hospital	Worcester	Church	250	16	84	5,138	Rotating	4	12	(1-e)	No	Op	32	$25
Worcester City Hospital	Worcester	City	400	72	28	9,494	Rotating	19	24	(1-o)	No	Req	24	No
Worcester Hahnemann Hospital	Worcester	NPAssn	140	71	29	2,474	Rotating	3	12	July	No	None	44	$35
MICHIGAN														
St. Joseph's Mercy Hospital	Ann Arbor	Church	115	..	..	2,361	Rotating	2	12	July	No	Req	44	$25
University Hospital [1]	Ann Arbor	State	1,285	75	25	21,243	Rotating	33	12	July	No	Req	52	No
Battle Creek Sanitarium [1]	Battle Creek	NPAssn	1,000	44	56	5,093	Mixed	2	12	July	No	None	29	$20
Mercy Hospital	Bay City	Church	161	28	72	3,671	Rotating	3	12	July	No	None	32	$25
City of Detroit Receiving Hospital	Detroit	City	714	100		21,600	Rotating	33	12	July	(43)	Req	33	(p)
Evangelical Deaconess Hospital	Detroit	Church	135	29	71	3,023	Rotating	3	12	July	No	Req	21	$15
Grace Hospital [1]	Detroit	NPAssn	443	76	24	9,439	Rotating	22	12	July & Sept.	(43)	Req	25	$20
Harper Hospital	Detroit	NPAssn	750	13	87	13,478	Rotating	32	12	July	(44)	Req	22	No
Henry Ford Hospital [1]	Detroit	NPAssn	610	46	54	9,628	Rotating	24	12	Sept.	No	Op	44	$100(a)
Providence Hospital	Detroit	Church	385	88	12	9,561	Rotating	16	12	July	(45)	None	26	$20
St. Joseph Mercy Hospital	Detroit	Church	240	21	79	4,122	Rotating	5	12	July	No	Req	16	$25
St. Mary's Hospital	Detroit	Church	306	36	64	4,588	Rotating	10	12	July	(46)	Req	34	$10
Dr. William J. Seymour Hospital	Eloise	County	1,368	100		17,189	Rotating	19	12	July	(43)	Req	33	$25
Hurley Hospital [1]	Flint	City	425	..	..	7,500	Rotating	12	12	June	No	None	27	$25
Blodgett Memorial Hospital	Grand Rapids	NPAssn	150	26	74	2,812	Mixed	2	12	July	No	Req	38	No
Butterworth Hospital	Grand Rapids	NPAssn	272	9	91	3,478	Rotating	5	12	July	No	Req	39	$7.50
St. Mary's Hospital	Grand Rapids	Church	253	39	61	4,427	Rotating	4	12	July	(47)	Req	24	No
Highland Park General Hospital	Highland Park	City	190	11	89	3,162	Rotating	6	12	July & Sept.	No	Req	16	$15
W. A. Foote Memorial Hospital	Jackson	City	156	34	66	4,352	Mixed	3	12	July	No	Req	25	$16.50
Edward W. Sparrow Hospital [1]	Lansing	NPAssn	135	..	..	4,828	Mixed	2	12	July	No	Req	34	$25
St. Lawrence Hospital	Lansing	Church	128	..	..	4,462	Rotating	2	12	July	(48)	Req	41	$30
Hackley Hospital [1]	Muskegon	NPAssn	125	76	24	2,157	Mixed	2	12	July	No	None	28	$25
Mercy Hospital	Muskegon	Church	124	60	40	3,361	Mixed	1	12	July	No	None	27	$50
Saginaw General Hospital	Saginaw	NPAssn	156	19	81	2,545	Rotating	3	12	July	No	Req	33	$25
St. Mary's Hospital	Saginaw	Church	176	..	..	3,661	Mixed	3	12	July	No	Req	17	$45
MINNESOTA														
St. Luke's Hospital	Duluth	NPAssn	270	25	75	4,901	Mixed	6	12	July	(49)	Req	64	$12.50
St. Mary's Hospital	Duluth	Church	290	61	39	4,988	Mixed	7	12	(1-f)	(49)	Req	70	$12.50
Asbury Hospital [1]	Minneapolis	Church	145	10	90	2,925	Mixed	3	12	Jan. & July	No	None	33	$25
Fitel Hospital	Minneapolis	NPAssn	120	61	39	4,250	Mixed	2	12	July	No	None	26	No
Fairview Hospital	Minneapolis	Church	225	60	40	3,852	Mixed	4	12	July	(50)	Req	24	$25
Lutheran Deaconess Home and Hosp.	Minneapolis	Church	150	61	39	3,041	Mixed	4	12	Jan. & July	No	None	17	$25
Minneapolis General Hospital [1]	Minneapolis	City	681	95	5	14,291	Rotating	27	12	Jan. & July	No	Req	50	No
Northwestern Hospital [1]	Minneapolis	NPAssn	185	25	75	4,665	Rotating	3	12	July	No	None	43	$25(h)
St. Barnabas Hospital	Minneapolis	Church	166	4	96	3,402	Mixed	2	12	July	No	None	27	$25
St. Mary's Hospital	Minneapolis	Church	275	33	67	3,748	Rotating	5	12	July	No	Op	42	$15(l)
Swedish Hospital	Minneapolis	NPAssn	313	3	97	4,906	Mixed	4	12	July	No	Req	24	$25
University Hospitals [1]	Minneapolis	State	450	75	25	8,630	Straight	22	12	Jan. & July	(51)	Req	74	No
Ancker Hospital	St. Paul	CyCo	1,650	100		12,387	Rotating	32	12	July	No	Req	59	No
Bethesda Hospital	St. Paul	Church	120	..	..	3,655	Mixed	3	12	July	(52)	None	37	$25
Charles T. Miller Hospital	St. Paul	NPAssn	216	67	33	5,089	Rotating	6	12	July	No	Req	86	No
Northern Pacific Beneficial Association Hospital	St. Paul	NPAssn	162		100	2,206	Rotating	2	12	July	No	Req	25	$25
St. Joseph's Hospital	St. Paul	Church	270	16	84	6,192	Rotating	6	12	July	(50)	None	36	$25
MISSOURI														
St. Louis County Hospital	Clayton	County	225	93	7	5,387	Rotating	8	12	July	No	Op	19	$25
Kansas City General Hospital	Kansas City	City	475	100		9,577	Rotating	24	12	July	No	Req	78	$30
Kansas City General Hospital No. 2 (col.)	Kansas City	City	274	100		2,819	Rotating	12	12	July	No	Req	51	$17.50
Menorah Hospital	Kansas City	NPAssn	167	6	94	2,828	Rotating	6	12	July	No	Req	41	$25
Research Hospital	Kansas City	NPAssn	225	11	89	3,834	Rotating	4	12	July	No	None	69	$25
St. Joseph's Hospital	Kansas City	Church	256	50	50	3,932	Mixed	5	12	July	No	Op	90	$25
St. Luke's Hospital	Kansas City	Church	294	37	63	4,285	Mixed	4	12	July	No	None	86	$25
St. Mary's Hospital	Kansas City	Church	176	41	59	3,716	Rotating	5	12	July	No	None	64	$25
Trinity Lutheran Hospital	Kansas City	Church	149	11	89	2,087	Mixed	4	12	July	No	None	40	$25(o)
Missouri Methodist Hospital	St. Joseph	Church	220	38	62	4,981	Rotating	4	12	July	No	Req	25	$15
St. Joseph's Hospital	St. Joseph	Church	141	43	57	2,767	Rotating	2	12	July	No	None	35	$30
Alexian Bros. Hosp. (male patients only)	St. Louis	Church	250	42	58	1,413	Mixed	5	12	July	(53)	Req	33	$25
Barnes Hospital	St. Louis	Church	270	34	66	7,389	Straight	32	12&18	Jan. & July	(54)	Op	54	No
Christian Hospital	St. Louis	NPAssn	129	25	75	1,555	Mixed	2	12	July	No	None	18	$15(l)
De Paul Hospital	St. Louis	Church	265	49	51	5,054	Rotating	7	12	July	No	Req	17	$25
Evangelical Deaconess Home and Hosp.	St. Louis	Church	180	15	85	3,948	Rotating	4	12	July	No	None	30	$25(h)
Jewish Hospital	St. Louis	NPAssn	290	82	18	4,903	Rotating	10	12	July	(55)	Req	33	$15
Lutheran Hospital	St. Louis	Church	180	6	94	3,372	Mixed	3	12	July	No	None	35	$25
Missouri Baptist Hospital	St. Louis	Church	500	21	79	4,853	Mixed	8	12	July	No	None	22	$25
St. Anthony's Hospital	St. Louis	Church	150	32	68	4,194	Rotating	5	12	July	(56)	Req	23	$10
St. John's Hospital	St. Louis	Church	316	22	78	5,246	Rotating	9	12	July	No	Op	24	$20
St. Louis City Hospital	St. Louis	City	806	100		21,819	Rotating	47	12	July	(57)	Req	42	$10(g)
St. Louis City Hospital No. 2 (col.)	St. Louis	City	340	100		8,115	Rotating	20	12	July	(58)	Op	41	$10(g)
St. Luke's Hospital	St. Louis	Church	210	40	60	4,320	Rotating	8	12	July	No	Req	30	$20
St. Mary's Group of Hospitals	St. Louis	Church	740	61	39	9,299	Rotating	26	12	July	(59)	Req	48	No
MONTANA														
Murray Hospital	Butte	Corp	132	..	..	1,847	Mixed	2	12	Jan. & July	No	Req	33	$40
St. James Hospital	Butte	Church	157	31	69	2,318	Rotating	2	12	July	No	Req	20	$50

[1] Numerical and other references will be found on pages 707 and 708.

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Name of Hospital	Location	Control	Classification of Patients Percentage: Capacity	Free and Part Pay	Full Pay	Total Patients Treated	Type of Internship	Number of Interns	Length of Service in Months	Service Commences	Affiliated Service	Outpatient Service	Autopsy Percentage	Salary per Month
NEBRASKA														
St. Francis Hospital	Grand Island	Church	146	70	30	1,803	Mixed	2	12	July	No	None	24	$25
Bryan Memorial Hospital	Lincoln	Church	114	13	87	2,049	Mixed	2	12	July	No	None	30	$25
Lincoln General Hospital [1]	Lincoln	City	165	..	..	3,214	Mixed	2	12	July	No	Req	46	$25
St. Elizabeth's Hospital	Lincoln	Church	200	80	20	3,654	Mixed	2	12	July	No	None	22	$25
Bishop Clarkson Memorial Hospital	Omaha	Church	108	71	29	2,135	Rotating	3	12	July	No	None	28	$25
Creighton Memorial St. Joseph's Hosp.	Omaha	Church	330	78	22	6,061	Rotating	11	12	July	No	Op	27	$25
Douglas County Hospital	Omaha	County	412	100		3,584	Rotating	11	12	July	No	Req	29	$20
Evangelical Covenant Hospital	Omaha	Church	125	66	34	2,027	Rotating	3	12	June	No	Op	16	$35
Immanuel Deaconess Institute	Omaha	Church	144	11	89	3,739	Rotating	4	12	June	No	None	42	$20(i)
Nebraska Methodist Episcopal Hospital	Omaha	Church	195	..	..	5,747	Rotating	4	12	July	No	None	19	$25
St. Catherine's Hospital	Omaha	Church	175	21	79	3,327	Rotating	4	12	July	No	None	19	$25
University of Nebraska Hospital	Omaha	State	197	100		3,517	Rotating	12	12	July	No	Req	78	$25
NEW HAMPSHIRE														
Mary Hitchcock Memorial Hospital [1]	Hanover	NPAssn	142	80	20	2,864	Rotating	4	12	Jan. & July	No	Req	81	$100 yr.
NEW JERSEY														
Atlantic City Hospital	Atlantic City	NPAssn	316	73	27	5,980	Rotating	8	12	July	No	Req	23	$25
Bayonne Hospital and Dispensary	Bayonne	NPAssn	200	82	18	3,754	Rotating	5	15	(1-e)	No	Req	33	$25
Cooper Hospital	Camden	NPAssn	353	71	29	7,808	Rotating	10	12	July	No	Op	53	$10
West Jersey Homeopathic Hospital	Camden	NPAssn	237	60	40	4,786	Rotating	7	12	June	No	Req	31	$10
Homeopathic Hospital of Essex County	East Orange	NPAssn	120	65	35	2,858	Rotating	3	12	July	No	Req	29	$40
Alexian Bros. Hosp. (male patients only)	Elizabeth	Church	165	59	41	1,763	Mixed	2	12	July & Aug.	(60)	Req	20	$75
Elizabeth General Hosp. and Disp.	Elizabeth	NPAssn	226	..	..	5,400	Rotating	8	12	July	No	Req	32	$15
St. Elizabeth Hospital [1]	Elizabeth	Church	255	51	49	4,485	Rotating	6	12	July	No	Req	21	$15
Englewood Hospital [1]	Englewood	NPAssn	233	86	14	5,042	Rotating	10	12-18	Jan. & July	No	Req	25	No
Hackensack Hospital	Hackensack	NPAssn	272	83	17	5,975	Rotating	8	12	July	No	Req	24	$25
St. Mary Hospital	Hoboken	Church	460	86	14	4,805	Rotating	9	12	July & Oct.	No	Req	16	$25
Christ Hospital	Jersey City	Church	306	21	79	5,662	Rotating	6	12	(1-p)	No	Req	21	$25
Medical Center of Jersey City [1]	Jersey City	City	900	94	6	19,026	Rotating	60	12-24	(1-q)	(61)	Req	15	No
St. Francis Hospital	Jersey City	Church	239	..	..	3,747	Rotating	7	12	July	(61)	Req	18	No
Monmouth Memorial Hospital	Long Branch	NPAssn	234	81	19	4,305	Rotating	9	18	Jan. & July	(62)	Op	16	$25
Mountainside Hospital	Montclair	NPAssn	155	87	13	5,585	Rotating	9	18	Jan. & July	No	Req	15	$25
All Souls Hospital [1]	Morristown	Church	134	38	62	2,006	Rotating	3	12	July & Sept.	No	Req	32	$35
Morristown Memorial Hospital [1]	Morristown	NPAssn	125	..	..	2,699	Rotating	4	12	(1-r)	No	Req	19	$40
Burlington County Hospital	Mount Holly	NPAssn	135	67	33	2,755	Rotating	4	12	July	No	Req	50	$30
Fitkin Memorial Hospital	Neptune	NPAssn	173	..	..	5,611	Rotating	7	12	Jan. & July	No	Op	19	$25
Hospital of St. Barnabas and for Women and Children [1]	Newark	Church	282	44	56	3,206	Rotating	3	12	July	No	Req	20	$45
Newark Beth Israel Hospital	Newark	NPAssn	414	43	57	10,317	Rotating	12	12	(1-e)	No	Op	45	$100 yr.
Newark City Hospital [1]	Newark	City	700	100		15,318	Rotating	24	24	(1-e)	No	None	27	No
Newark Memorial Hospital	Newark	NPAssn	157	69	31	2,450	Rotating	4	12	July	No	Req	23	$25
Presbyterian Hospital	Newark	Church	267	12	88	5,585	Mixed	..	12	July	No	Op	15	...
St. James Hospital [1]	Newark	Church	125	50	50	2,285	Rotating	3	12	July	No	Req	35	$30
St. Michael's Hospital	Newark	Church	335	71	29	4,973	Rotating	7	12	July & Aug.	(61)	Req	40	$30
St. Peter's General Hospital	New Brunswick	Church	197	50	50	4,802	Rotating	4	12	July & Sept.	No	Req	28	(l)
Orange Memorial Hospital	Orange	NPAssn	378	64	36	2,980	Rotating	8	12	July	No	Req	34	$25
Passaic General Hospital [1]	Passaic	NPAssn	225	70	30	4,027	Rotating	4	12	June	No	Req	29	$25
St. Mary's Hospital [1]	Passaic	Church	200	85	15	3,878	Rotating	4	12	July	No	Req	21	$25
Nathan and Miriam Barnert Memorial Hospital [1]	Paterson	NPAssn	117	63	37	2,888	Rotating	4	12	July & Oct.	No	Req	31	$15-20
Paterson General Hospital	Paterson	NPAssn	326	80	20	5,716	Rotating	7	18	Jan. & July	No	Op	25	No
St. Joseph Hospital	Paterson	Church	458	68	32	6,772	Rotating	6	12	July	No	Req	25	$12.50
Muhlenberg Hospital	Plainfield	NPAssn	275	69	31	5,725	Rotating	5	12	July	No	Req	27	$25
Holy Name Hospital	Teaneck	Church	223	52	48	4,066	Rotating	6	12	July	(65)	Op	16	$30
Mercer Hospital	Trenton	NPAssn	250	44	56	4,477	Rotating	6	12	July	No	Req	25	$25
St. Francis Hospital	Trenton	Church	314	97	3	4,678	Rotating	8	12	July	(64)	Req	22	$25
William McKinley Memorial Hospital	Trenton	NPAssn	176	68	32	2,885	Rotating	4	12	July	No	Req	16	$25
North Hudson Hospital	Weehawken	NPAssn	165	44	56	3,211	Rotating	6	12	July & Sept.	(61)	Req	22	$25
NEW YORK														
Albany Hospital [1]	Albany	NPAssn	585	89	11	10,573	Rotating	16	12	July & Aug.	No	Req	60	No
Memorial Hospital [1]	Albany	NPAssn	140	40	60	2,802	Mixed	5	12	July & Sept.	No	Req	42	$25
St. Peter's Hospital	Albany	Church	150	..	..	2,706	Mixed	5	12	July	(65)	Req	37	$40
Auburn City Hospital	Auburn	NPAssn	155	68	32	3,343	Rotating	3	12	July	No	Req	18	$25
Binghamton City Hospital	Binghamton	City	500	58	42	9,186	Rotating	10	24	July	No	Req	19	(k)
Beth-El Hospital	Brooklyn	NPAssn	258	60	40	5,831	Rotating	15	12&18	Jan. & July	No	Op	23	No
Beth Moses Hospital	Brooklyn	NPAssn	224	40	60	4,954	Rotating	15	24	Jan. & July	No	Req	18	No
Brooklyn Hospital	Brooklyn	NPAssn	420	25	75	7,358	Rotating	16	24	July	No	Op	49	No
Bushwick Hospital	Brooklyn	NPAssn	127	40	60	3,110	Rotating	6	24	July	No	Req	21	No
Caledonian Hospital	Brooklyn	NPAssn	130	62	38	1,426	Rotating	2	12	July	No	Req	20	$25
Coney Island Hospital [1]	Brooklyn	City	300	100		9,094	Rotating	20	24	July	No	Req	34	No
Cumberland Hospital	Brooklyn	City	318	100		8,590	Rotating	24	24	July	No	Req	42	No
Greenpoint Hospital	Brooklyn	City	368	100		8,292	Rotating	16	24	July	No	Req	34	No
Israel-Zion Hospital	Brooklyn	NPAssn	430	..	..	10,671	Rotating	24	24	Jan. & July	(66)	Req	19	No
Jewish Hospital [1]	Brooklyn	NPAssn	674	71	29	15,272	Rotating	52	30	Jan. & July	(66)	Req	46	No
Kings County Hospital	Brooklyn	City	3,240	67	33	40,843	Rotating	54	18	(1-e)	No	Req	17	No
Long Island College Hospital	Brooklyn	NPAssn	480	51	49	8,215	Straight	19	12	July	No	Req	39	No
Methodist Episcopal Hospital	Brooklyn	Church	400	40	60	9,585	Rotating	12	24	July	No	Req	26	No
Norwegian Lutheran Deaconesses' Home and Hospital [1]	Brooklyn	Church	194	51	49	4,261	Rotating	8	12	July	No	Req	31	No
St. Catherine's Hospital	Brooklyn	Church	305	11	89	6,714	Rotating	14	24	July	No	Req	20	No
St. John's Hospital	Brooklyn	Church	234	25	75	5,270	Rotating	12	36	July	No	Req	54	No
St. Mary's Hospital	Brooklyn	Church	326	72	28	5,656	Rotating	12	24	July	No	Req	21	No
St. Peter's Hospital	Brooklyn	Church	204	78	22	2,828	Rotating	6	12	July	No	None	24	No
Trinity Hospital	Brooklyn	NPAssn	125	83	17	2,016	Rotating	10	12	July	No	Req	24	No
Wyckoff Heights Hospital	Brooklyn	NPAssn	200	70	30	5,035	Rotating	11	22	(1-q)	No	Req	15	No
Buffalo and Emergency Hospitals of the Sisters of Charity	Buffalo	Church	340	80	20	7,227	Rotating	12	12	July	(67)	Op	17	$25
Buffalo City Hospital [1]	Buffalo	CtyCo	1,063	90	4	12,035	Mixed	17	12-36	July	No	Req	35	$50
Buffalo General Hospital	Buffalo	NPAssn	467	47	53	10,238	Rotating	14	12	July	(68)	Req	35	No
Deaconess Hospital	Buffalo	NPAssn	225	44	56	5,282	Rotating	6	12	July	No	Op	31	$25
Mercy Hospital	Buffalo	Church	215	41	59	5,031	Rotating	5	12	July	No	Req	16	$30
Millard Fillmore Hospital	Buffalo	NPAssn	309	56	44	6,856	Rotating	6	12	July	No	Req	29	$25
Arnot-Ogden Memorial Hospital	Elmira	NPAssn	213	57	43	4,187	Mixed	2	12	July	No	Req	36	$20(j)
St. Joseph's Hospital	Elmira	Church	217	27	73	4,351	Rotating	2	12	July	No	None	34	$25
Ideal Hospital	Endicott	City	148	3	97	5,489	Mixed	3	12	July	No	None	34	$25
Jamaica Hospital	Jamaica	NPAssn	173	44	56	5,469	Rotating	8	18	July	No	Req	21	No
Mary Immaculate Hospital	Jamaica	Church	310	49	51	6,961	Rotating	14	24	July	No	Req	25	No

Numerical and other references will be found on pages 707 and 708.

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Name of Hospital	Location	Control	Capacity	Classification of Patients Percentage: Free and Part Pay	Classification of Patients Percentage: Full Pay	Total Patients Treated	Type of Internship	Number of Interns	Length of Service in Months	Service Commences	Affiliated Service	Outpatient Service	Autopsy Percentage	Salary per Month
NEW YORK—Continued														
Charles S. Wilson Memorial Hospital	Johnson City	NPAssn	220	6	94	4,563	Rotating	3	12	July	No	Req	60	$25
Kingston Hospital [1]	Kingston	NPAssn	133	42	58	2,961	Rotating	3	12	Jan. & July	(69)	None	21	$25(j)
Our Lady of Victory Hospital	Lackawanna	Church	150	59	41	1,867	Rotating	3	12	July	(70)	Req	19	$50
St. John's Long Island City Hospital	Long Island City	Church	304	67	33	7,677	Rotating	14	24	July	No	Req	48	No
Nassau Hospital	Mineola	NPAssn	205	73	27	5,991	Rotating	6	18	Jan. & July	No	None	24	$50
Mount Vernon Hospital [1]	Mount Vernon	NPAssn	100	41	59	4,393	Rotating	6	24	July	No	Req	24	(q)
New Rochelle Hospital	New Rochelle	NPAssn	147	38	62	4,618	Rotating	7	12	July	No	Req	36	$25
Bellevue Hospital [1]	New York	City	2,418	100		64,349	Straight	124	12-24	Jan. & July	No	Req	27	No
Beth David Hospital	New York	NPAssn	156	68	32	2,716	Rotating	7	24	Jan. & July	No	Req	27	No
Beth Israel Hospital [1]	New York	NPAssn	438	53	47	9,759	Rotating	28	12&24	(1-c)	No	Op	41	No
Bronx Hospital	New York	NPAssn	313	38	62	9,115	Rotating	16	27	(1-s)	No	Req	30	No
Columbus Hospital	New York	Church	300	75	25	4,053	Rotating	9	18	(1-g)	No	Req	21	No
Fifth Avenue Hospital	New York	NPAssn	340	44	56	5,797	Straight	9	12&15	(1-c)	No	Req	20	No
Fordham Hospital	New York	City	609	100		15,249	Straight	28	12&24	(1-t)	No	Op	49	No
French Hospital	New York	Frat	200	46	54	3,738	Straight	12	24	(1-c)	No	Op	22	No
Gouverneur Hospital	New York	City	229	100		4,954	Mixed	16	12&24	Jan. & July	No	Op	31	No
Harlem Hospital [1]	New York	City	325	100		12,842	Rotating	40	12&24	Jan. & July	No	Op	30	No
Hospital for Joint Diseases	New York	NPAssn	355	63	37	5,208	Rotating	12	24	Jan. & July	(71)	Req	31	No
Knickerbocker Hospital	New York	NPAssn	205	79	21	3,768	Rotating	10	24	(1-c)	No	Req	22	No.
Lebanon Hospital	New York	NPAssn	182	94	6	4,832	Straight	12	24	(1-t)	No	Req	34	No
Lenox Hill Hospital [1]	New York	NPAssn	600	45	55	9,086	Rot.&Mix.	25	24	Jan. & July	No	Op	42	No
Lincoln Hospital	New York	City	265	100		8,406	Rotating	20	24	Jan. & July	No	Req	36	No
Manhattan General Hospital	New York	Corp	150	13	87	2,636	Mixed	3	12	June	No	Req	16	No
Metropolitan Hospital [1]	New York	City	1,620	100		14,861	Rotat.&Stra.	44	24	July	No	Req	25	No
Misericordia Hospital	New York	Church	322	45	55	4,709	Mixed	6	18	Jan. & July	No	Req	27	No
Montefiore Hosp. for Chronic Diseases [1]	New York	NPAssn	711	95	5	2,491	Mixed	12	12	Jan. & July	No	Req	69	$25
Morrisania City Hospital [1]	New York	City	539	100		15,584	Rotating	39	24	Jan. & July	No	Op	34	No
Mount Sinai Hospital [2]	New York	NPAssn	700	76	24	14,832	Rotating	14	12&29	(1-u)	No	Op	46	(r)
New York City Hospital	New York	City	1,060	100		9,633	Rotating	36	24	Jan. & July	No	Req	22	No
New York Homeopathic Medical College and Flower Hospital	New York	NPAssn	225	74	26	5,554	Rotating	15	12	July	(72)	Req	24	No
New York Hospital [1]	New York	NPAssn	1,150	75	25	14,154	Straight	36	12	July	No	Req	57	No
New York Infirmary for Women and Children [2]	New York	NPAssn	162	45	55	3,246	Rotating	5	12	(1-v)	No	Req	69	$10
New York Polyclinic Medical School and Hospital	New York	NPAssn	346	70	30	8,178	Rotating	8	24	(1-c)	No	Req	34	No
New York Post Graduate Medical School and Hospital	New York	NPAssn	415	17	83	9,780	Straight	27	12-27	(1-c)	No	Req	26	No
Presbyterian and Sloane Hospitals [1]	New York	NPAssn	970	71	29	17,097	Straight	43	12-25	Varies	No	Req	41	No
Roosevelt Hospital	New York	NPAssn	379	60	40	6,138	Straight	21	24	Jan. & July	No	Req	30	No
St. Francis Hospital	New York	Church	425	84	16	5,387	Mixed	8	24	Jan. & July	No	None	22	No
St. Luke's Hospital [1]	New York	Church	540	59	41	8,107	Mixed	16	24	Jan. & July	No	Req	49	No
St. Vincent's Hospital	New York	Church	486	58	42	9,774	Rotating	32	24	Jan. & July	No	Req	19	No
Sydenham Hospital [1]	New York	NPAssn	200	55	45	5,052	Rotating	12	24	Jan. & July	No	Op	35	No
U. S. Marine Hospital (Ellis Island)	New York	USPHS	552	100		3,269	Mixed	2	12	July	(61)	Req	81	(d)
United Hospital	Port Chester	NPAssn	200	62	38	4,851	Rotating	4	12	July	No	Req	46	$40(h)
Vassar Brothers Hospital	Poughkeepsie	NPAssn	225	34	66	4,468	Rotating	4	12	July	No	Req	17	$30(j)
Genesee Hospital	Rochester	NPAssn	225	60	40	4,349	Rotating	7	12	July	No	Req	30	$15
Highland Hospital	Rochester	NPAssn	177	87	13	4,111	Rotating	5	12	July	No	Req	33	$22.50
Rochester General Hospital	Rochester	NPAssn	303	39	61	7,259	Rotating	8	12	July	No	Req	67	(g)
St. Mary's Hospital	Rochester	Church	210	48	52	4,474	Rotating	5	12	July	No	Req	32	$20
Strong Memorial and Rochester Municipal Hospitals [1]	Rochester	NP-Cy	579	52	48	11,892	Straight	30	12	July & Sept.	No	Req	67	No
Ellis Hospital [1]	Schenectady	NPAssn	283	24	77	7,290	Rotating	8	12	July	No	Req	28	No
U. S. Marine Hospital	Stapleton	USPHS	288	100		4,023	Rotating	10	12	July	(73)	Req	43	(d)
St. Vincent's Hospital	Staten Island	Church	255	..	..	5,268	Rotating	6	18	(1-c)	No	Req	26	No
Staten Island Hospital	Staten Island	NPAssn	286	81	19	5,259	Rotating	7	18	(1-c)	No	Req	26	No
General Hospital of Syracuse	Syracuse	NPAssn	110	75	25	3,092	Rotating	3	12	July	No	Req	32	$10
Hospital of the Good Shepherd, Syracuse University	Syracuse	NPAssn	242	49	51	4,585	Mixed	9	12	July & Aug.	(74)	None	38	No
St. Joseph Hospital	Syracuse	Church	231	82	18	5,858	Mixed	6	12	July	No	None	28	No
Syracuse Memorial Hospital	Syracuse	NPAssn	240	42	58	6,250	Rotating	7	12	July	No	Req	36	No
Samaritan Hospital [1]	Troy	NPAssn	181	21	79	2,592	Rotating	3	12	(1-t)	No	Req	26	$40
Troy Hospital	Troy	Church	262	51	49	3,430	Rotating	4	12	July	(65)	Req	24	$30
Grasslands Hospital [1]	Valhalla	County	900	90	10	6,895	Rotating	18	18	Jan. & July	No	Req	72	(s)
St. John's Riverside Hospital	Yonkers	NPAssn	200	73	27	7,319	Mixed	5	12	Jan. & July	No	Op	32	$50
St. Joseph Hospital	Yonkers	Church	186	48	52	2,952	Rotating	4	12	July	No	Req	16	$25
Yonkers General Hospital	Yonkers	NPAssn	197	81	19	2,391	Rotating	4	12	Jan. & July	No	Req	22	$50
NORTH CAROLINA														
Duke Hospital [1]	Durham	NPAssn	456	89	11	8,102	Straight	32	12	July & Sept.	No	Req	61	No
Lincoln Hospital (col.)	Durham	NPAssn	108	82	18	1,926	Rotating	3	12	June	No	Req	28	$5
Watts Hospital	Durham	NPAssn	225	61	39	4,584	Rotating	5	12	July	No	Req	22	$15(h)
Highsmith Hospital	Fayetteville	NPAssn	226	61	39	2,882	Mixed	2	12	July	No	Req	17	$25
L. Richardson Memorial Hospital (col.)	Greensboro	NPAssn	64	77	23	814	Mixed	2	12	July & Oct.	No	Req	15	$10
St. Agnes Hospital (col.)	Raleigh	Church	100	90	10	979	Mixed	2	12	July & Oct.	No	Req	22	(h)
Park View Hospital [1]	Rocky Mount	NPAssn	100	32	68	2,125	Mixed	2	12	July	No	Req	23	$25
Davis Hospital	Statesville	Corp	132	50	50	2,561	Mixed	1	12	July	No	Req	24	No
James Walker Memorial Hospital	Wilmington	NPAssn	152	64	36	4,646	Rotating	4	12	July	No	Req	18	$25(h)
City Memorial Hospital	Winston-Salem	City	260	53	47	3,621	Mixed	7	12	July	(75)	Req	18	$15(t)
NORTH DAKOTA														
St. John's Hospital	Fargo	Church	165	32	68	3,435	Mixed	2	12	July	No	None	35	$20
Trinity Hospital	Minot	Church	170	55	45	2,993	Rotating	4	12	July	No	None	66	No
OHIO														
City Hospital	Akron	NPAssn	350	49	51	7,840	Rotating	12	12	July	(76)	Req	60	$20
Peoples Hospital	Akron	NPAssn	156	35	65	3,156	Rotating	5	12	July	(76)	Req	38	$25
St. Thomas Hospital	Akron	Church	183	61	39	4,208	Rotating	4	12	July	No	None	36	$20
Mercy Hospital	Canton	Church	200	81	19	5,382	Mixed	4	12	July	No	None	19	$25
Bethesda Hospital [1]	Cincinnati	Church	239	35	65	6,518	Rotating	7	12	July	(77)	Req	19	$25(j)
Christ Hospital	Cincinnati	Church	318	65	35	5,646	Rotating	9	12	July	(78)	Req	29	$22.50
Cincinnati General Hospital [1]	Cincinnati	City	925	94	6	16,902	Rotating	36	12	July	(79)	Req	41	No
Deaconess Hospital	Cincinnati	Church	175	50	50	4,007	Rotating	5	12	July	(80)	None	35	$25
Good Samaritan Hospital	Cincinnati	Church	535	72	28	8,660	Rotating	12	12	June	No	Req	18	$12.50
Jewish Hospital	Cincinnati	NPAssn	262	64	36	4,949	Rotating	8	12	July	(81)	Req	26	$20
Charity Hospital	Cleveland	Church	301	39	61	5,242	Rotating	12	12	July	(82)	Req	45	No
City Hospital [1]	Cleveland	City	1,090	100		14,307	Rotating	36	12	July	(83)	Req	40	No

Numerical and other references will be found on pages 707 and 708.

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Name of Hospital	Location	Control	Classification of Patients Percentage: Capacity	Free and Part Pay	Full Pay	Total Patients Treated	Type of Internship	Number of Interns	Length of Service in Months	Service Commences	Affiliated Service	Outpatient Service	Autopsy Percentage	Salary per Month
OHIO—Continued														
Huron Road Hospital [1]	Cleveland	NPAssn	120	18	82	2,256	Rotating	6	12	July	No	Req	44	$50
Mount Sinai Hospital [1]	Cleveland	NPAssn	270	92	8	7,478	Rotating	11	12	July	(84)	Req	37	$10
St. Alexis Hospital	Cleveland	Church	220	34	66	3,927	Rotating	8	12	July	(82)	Req	23	$10
St. John's Hospital	Cleveland	Church	207	21	79	4,897	Rotating	6	12	July	No	None	28	$12.50
St. Luke's Hospital	Cleveland	Church	392	27	73	8,241	Rotating	14	12	July	No	Req	24	No
University Hospitals [1]	Cleveland	NPAssn	539	49	51	14,882	Rotat&Str	96	12-24	(1-t)	(85)	Req	63	(u)
Woman's Hospital [1]	Cleveland	NPAssn	120	27	73	2,012	Rotating	3	12	July	(83)	None	35	$25
Grant Hospital	Columbus	NPAssn	333	69	31	5,498	Rotating	8	12	July	No	None	20	$25
St. Francis Hospital	Columbus	Church	160	88	12	3,142	Rotating	8	12	July	(87)	None	31	$125 yr.
Starling Loving University Hospital	Columbus	State	276	68	32	4,808	Mixed	9	12	July	No	Req	47	(m)
White Cross Hospital	Columbus	Church	273	18	82	4,512	Rotating	6	12	July	No	None	31	$25
Miami Valley Hospital	Dayton	NPAssn	343	..	..	7,631	Rotating	8	12	July	(88)	None	58	$25
St. Elizabeth Hospital	Dayton	Church	420	39	61	6,023	Rotating	8	12	July	No	None	23	$25
Mercy Hospital	Hamilton	Church	220	78	22	2,365	Rotating	2	12	July	No	Req	29	$25(w)
Springfield City Hospital	Springfield	City	303	66	34	5,832	Rotating	6	12	July	No	Req	21	$30
Flower Hospital	Toledo	Church	125	38	62	2,511	Rotating	3	12	July	No	None	37	$40
Lucas County General Hospital	Toledo	County	315	100	..	4,742	Rotating	10	12	July	No	Req	48	$25
Mercy Hospital	Toledo	Church	121	82	18	3,301	Rotating	2	12	July	No	Req	21	$25
St. Vincent's Hospital [1]	Toledo	Church	354	61	39	9,082	Rotating	5	12	July	No	Req	24	$25
Toledo Hospital	Toledo	NPAssn	275	59	41	2,517	Rotating	5	12	July	No	None	32	$25
St. Elizabeth's Hospital	Youngstown	Church	300	30	70	4,117	Rotating	5	12	July	No	None	27	$20(j)
Youngstown Hospital	Youngstown	NPAssn	474	57	43	7,302	Rotating	12	12	July	No	None	29	$20
OKLAHOMA														
Oklahoma City General Hospital	Oklahoma City	Corp	112	..	..	3,395	Rotating	4	12	July	No	Req	20	$25
St. Anthony Hospital	Oklahoma City	Church	200	64	36	6,522	Rotating	8	12	July	No	None	33	$15
State University Hospitals [1]	Oklahoma City	State	522	91	9	7,251	Rotating	14	12	July	No	Req	39	$10
Wesley Hospital	Oklahoma City	Part	175	50	50	4,000	Rotating	4	12	July	No	None	27	$25
Morningside Hospital	Tulsa	Corp	249	45	55	5,171	Rotating	5	12	July	No	Req	15	$25
St. John's Hospital	Tulsa	Church	273	..	..	4,210	Rotating	5	12	July	No	None	30	$25(w)
OREGON														
Emanuel Hospital	Portland	Church	280	..	..	6,159	Rotating	8	12	July	(80)	None	38	$20
Good Samaritan Hospital	Portland	Church	350	6	94	7,217	Rotating	9	12	July	No	Req	36	$20
Portland Sanitarium and Hospital	Portland	Church	136	..	..	3,728	Rotating	2	12	July	No	None	56	$75(n)
St. Vincent's Hospital	Portland	Church	402	50	50	8,719	Rotating	8	12	July	No	None	43	$25
Univ. of Oregon Medical School Hosps. [1]	Portland	Co-Sta	395	100		6,973	Rotating	16	12	July	(90)	Req	39	$20
PENNSYLVANIA														
Abington Memorial Hospital	Abington	NPAssn	275	54	46	4,969	Rotating	8	24	July	No	Req	50	No
Allentown Hospital [1]	Allentown	NPAssn	325	54	46	6,392	Rotating	8	12	July	No	Req	40	No
Sacred Heart Hospital	Allentown	Church	300	63	37	3,553	Rotating	6	12	July	(91)	Req	38	No
Altoona Hospital	Altoona	NPAssn	180	58	42	2,559	Rotating	5	12	July	No	Req	25	$25
Mercy Hospital [1]	Altoona	NPAssn	124	65	35	2,053	Rotating	4	12	July	No	Req	21	$25
St. Luke's Hospital	Bethlehem	NPAssn	206	60	40	4,080	Rotating	7	12	July	No	Req	35	(h)
Braddock General Hospital [1]	Braddock	NPAssn	136	62	38	2,207	Rotating	4	12	July	No	Req	21	$25
Bryn Mawr Hospital	Bryn Mawr	NPAssn	264	37	63	4,121	Rotating	8	12	July	No	Req	37	No
Chester Hospital [1]	Chester	NPAssn	285	62	38	3,502	Rotating	6	12	July	No	Req	21	$15
G. F. Geisinger Memorial Hospital	Danville	NPAssn	198	46	54	4,363	Rotating	10	12	July	No	Req	33	No
Easton Hospital [1]	Easton	NPAssn	219	59	41	4,495	Rotating	6	12	July	No	Req	30	(h)
Hamot Hospital	Erie	NPAssn	253	60	40	5,245	Rotating	7	12	July	No	Req	35	$25
St. Vincent's Hospital	Erie	Church	215	65	35	9,470	Rotating	8	12	July	No	Req	35	$15(j)
Harrisburg Hospital	Harrisburg	NPAssn	246	45	55	4,808	Rotating	8	12	July	No	Req	36	$25
Harrisburg Polyclinic Hospital	Harrisburg	NPAssn	185	44	56	2,828	Rotating	4	12	July	No	Req	38	$50
Conemaugh Valley Memorial Hospital	Johnstown	NPAssn	200	55	45	5,337	Rotating	6	12	July	No	Req	20	No
Lancaster General Hospital [1]	Lancaster	NPAssn	273	44	56	5,283	Rotating	6	12	July	No	Req	50	$17.50
McKeesport Hospital	McKeesport	NPAssn	263	55	45	4,175	Rotating	6	12	July	No	Req	16	$25
Jameson Memorial Hospital	New Castle	NPAssn	154	45	55	2,734	Rotating	4	12	July	No	None	18	$15
Montgomery Hospital [1]	Norristown	NPAssn	110	55	45	3,331	Rotating	4	12	July	No	Req	24	$30
Chestnut Hill Hospital	Philadelphia	NPAssn	114	44	56	2,208	Rotating	4	12	July	No	Req	23	$50
Frankford Hospital	Philadelphia	NPAssn	142	46	54	3,408	Rotating	7	12	July	No	Req	22	No
Germantown Dispensary and Hospital	Philadelphia	NPAssn	360	55	45	8,550	Rotating	12	24	July	No	Req	27	No
Graduate Hospital of the University of Pennsylvania	Philadelphia	NPAssn	475	48	52	7,345	Rotating	8	24	July	(92)	Req	44	No
Hahnemann Hospital	Philadelphia	NPAssn	592	62	38	12,897	Rotating	24	12	July	No	Req	36	No
Hospital of the Protestant Episcopal Church	Philadelphia	Church	525	94	6	6,841	Rotating	16	24	Jan. & July	No	Req	34	No
Hosp. of the Univ. of Pennsylvania [1]	Philadelphia	State	594	63	41	9,767	Rotating	28	24	July	No	Req	64	No
Hosp. of the Woman's Medical College [2]	Philadelphia	NPAssn	173	69	31	2,959	Rotating	6	12	July & Sept.	No	Req	38	No
Jefferson Medical College Hospital	Philadelphia	NPAssn	688	64	36	12,963	Rotating	28	27	June	No	Req	46	No
Jewish Hospital [1]	Philadelphia	NPAssn	426	45	55	7,723	Rotating	18	24	June	(86)	Req	43	No
Lankenau Hospital	Philadelphia	NPAssn	298	45	55	4,913	Rotating	10	24	July	(93)	Req	33	No
Mercy Hospital [1] (col.)	Philadelphia	NPAssn	110	93	7	2,033	Rotating	5	12	July	(94)	Req	25	$5
Methodist Episcopal Hospital [1]	Philadelphia	Church	242	..	..	3,572	Rotating	8	12	July	No	Req	23	No
Misericordia Hospital [1]	Philadelphia	Church	235	..	..	4,309	Rotating	9	12	July	No	Req	33	No
Mount Sinai Hospital	Philadelphia	NPAssn	316	41	59	7,756	Rotating	14	12	June	No	Req	62	No
Northeastern Hospital	Philadelphia	NPAssn	101	27	73	2,614	Rotating	4	12	July	No	Req	15	$20
Pennsylvania Hospital	Philadelphia	NPAssn	560	75	25	8,833	Rotating	18	24	(1-w)	(95)	Req	45	No
Philadelphia General Hospital [1]	Philadelphia	City	2,560	100		29,488	Rotating	60	24	July	No	Req	48	No
Presbyterian Hospital	Philadelphia	Church	425	53	47	5,073	Rotating	12	24	July	No	Req	41	No
St. Agnes Hospital	Philadelphia	Church	456	91	9	6,246	Rotating	10	12	July	No	Req	20	No
St. Joseph's Hospital	Philadelphia	Church	221	55	45	2,538	Rotating	6	12	July	No	Req	28	No
St. Luke's and Children's Hospital [1]	Philadelphia	NPAssn	209	61	39	3,838	Rotating	8	12	July	No	Op	18	No
St. Mary's Hospital	Philadelphia	Church	235	73	27	4,314	Rotating	7	12	July	No	Req	37	No
Temple University Hospital	Philadelphia	NPAssn	441	66	34	8,089	Rotating	18	24	July	(96)	Req	33	No
Woman's Hospital [2]	Philadelphia	NPAssn	125	43	57	3,135	Rotating	6	12	July & Sept.	(97)	Req	24	No
Women's Homeopathic Hospital	Philadelphia	NPAssn	200	80	20	3,064	Rotating	4	12	July	No	Req	20	$20
Allegheny General Hospital [1]	Pittsburgh	NPAssn	405	69	31	6,347	Rotating	12	12	July	No	Req	25	No
Homeopathic Medical and Surgical Hospital and Dispensary	Pittsburgh	NPAssn	326	40	60	4,546	Rotating	8	12	July	(98)	Req	20	No
Mercy Hospital	Pittsburgh	Church	670	65	35	10,121	Rotating	24	12	July	(99)	Req	27	No
Montefiore Hospital	Pittsburgh	NPAssn	225	80	20	5,267	Rotating	8	12	July	No	Req	28	$10
Passavant Hospital [1]	Pittsburgh	Church	141	47	53	2,404	Rotating	5	12	July	No	Req	28	$10
Pittsburgh Hospital	Pittsburgh	Corp	206	55	45	3,708	Rotating	5	12	July	No	Req	21	No
Presbyterian Hospital [1]	Pittsburgh	Church	163	43	57	2,210	Rotating	18	12	July	(100)	Req	24	No
St. Francis Hospital	Pittsburgh	Church	537	53	47	9,724	Rotating	15	12	July	(98)	Req	36	No
St. John's General Hospital	Pittsburgh	Church	202	53	47	2,877	Rotating	5	12	July	No	Req	24	$25
St. Joseph's Hospital	Pittsburgh	Church	140	86	14	1,955	Rotating	4	12	July	No	Req	21	No
St. Margaret Memorial Hospital	Pittsburgh	Church	152	82	18	2,175	Rotating	4	12	July	No	Req	28	No

Numerical and other references will be found on pages 707 and 708.

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Name of Hospital	Location	Control	Capacity	Classification of Patients Percentage: Free and Part Pay	Classification of Patients Percentage: Full Pay	Total Patients Treated	Type of Internship	Number of Interns	Length of Service in Months	Service Commences	Affiliated Service	Outpatient Service	Autopsy Percentage	Salary per Month
PENNSYLVANIA—Continued														
South Side Hospital	Pittsburgh	NPAssn	225	74	26	4,162	Rotating	7	12	July	No	Req	31	No
Western Pennsylvania Hospital [1]	Pittsburgh	NPAssn	651	46	54	9,636	Rotating	16	12	July	No	Req	22	No
Pottsville Hospital [1]	Pottsville	NPAssn	140	57	43	2,728	Rotating	4	12	July	No	Req	35	$25
Reading Hospital	Reading	Corp	268	55	45	5,178	Rotating	8	12	July	No	Req	61	No
St. Joseph's Hospital	Reading	Church	205	69	31	3,989	Rotating	6	12	July	(101)	Req	56	No
Robert Packer Hospital	Sayre	NPAssn	253	60	40	6,080	Rotating	8	12	Jan. & July	No	Req	44	No
Hahnemann Hospital	Scranton	NPAssn	125	60	40	2,957	Rotating	4	12	July	No	Req	16	$15.50
Moses Taylor Hospital	Scranton	NPAssn	100	..	..	1,615	Rotating	3	12	July	(102)	Req	42	No
Scranton State Hospital	Scranton	State	188	92	8	3,263	Rotating	8	12	July	No	Req	21	$8.33
Valley Hospital [1]	Sewickley	NPAssn	135	44	56	2,045	Rotating	4	12	July	No	Req	25	No
Uniontown Hospital	Uniontown	NPAssn	225	31	69	5,715	Rotating	5	12	July	No	Req	45	$25
Washington Hospital	Washington	NPAssn	166	44	56	2,792	Rotating	4	12	July	No	Req	31	$25
Chester County Hospital	West Chester	NPAssn	162	44	56	2,692	Rotating	4	12	July	No	Req	28	$25
Mercy Hospital [1]	Wilkes-Barre	Church	220	52	48	4,443	Rotating	6	12	July	No	Req	21	$40 yr.
Wilkes-Barre General Hospital	Wilkes-Barre	NPAssn	407	62	38	8,107	Rotating	10	12	July	No	Req	24	No
Columbia Hospital [1]	Wilkinsburg	Church	200	61	39	5,962	Rotating	5	12	July	No	Req	21	$30
Williamsport Hospital [1]	Williamsport	NPAssn	275	50	50	5,897	Rotating	6	12	July	No	Req	58	No
Windber Hospital [1]	Windber	NPAssn	117	10	90	2,658	Rotating	2	12	June	No	Req	32	No
York Hospital	York	NPAssn	217	62	38	4,194	Rotating	6	12	July	No	Req	16	$25
RHODE ISLAND														
Memorial Hospital	Pawtucket	NPAssn	190	49	51	2,707	Rotating	6	12	(1-x)	No	Req	28	No
Homeopathic Hospital	Providence	NPAssn	200	53	47	4,149	Rotating	4	12	July	No	Req	15	$50
Rhode Island Hospital	Providence	NPAssn	600	75	25	9,360	Mixed&Str	29	24	Monthly	(103)	Req	43	No
St. Joseph's Hospital	Providence	Church	343	60	40	4,015	Rotating	6	24	(1-f)	No	Req	15	No
SOUTH CAROLINA														
Roper Hospital	Charleston	NPAssn	325	72	28	6,545	Rotating	14	12	July	No	Req	42	$10
Columbia Hospital	Columbia	County	295	47	53	4,906	Mixed	3	12	July	No	Req	18	$40(h)
Greenville City Hospital	Greenville	City	149	77	23	4,119	Rotating	5	12	July	No	Req	34	$25
Spartanburg General Hospital	Spartanburg	County	280	67	33	4,230	Rotating	5	12	July	No	Req	25	$15(h)
TENNESSEE														
Baroness Erlanger Hospital	Chattanooga	CyCo	246	70	30	6,778	Rotating	10	12	July	(104)	Op	18	$25
Knoxville General Hospital	Knoxville	City	380	69	31	7,254	Rotating	9	18	(1-e)	(105)	Req	18	$25
Baptist Memorial Hospital	Memphis	Church	400	49	51	13,540	Rotating	12	18	(1-e)	No	None	16	$22
Memphis General Hospital [1]	Memphis	City	400	100		13,837	Rotating	19	18	Monthly	No	Req	18	$30
Methodist Hospital	Memphis	Church	190	45	55	5,344	Mixed	2	12	Jan. & July	No	None	16	$40
St. Joseph's Hospital	Memphis	Church	200	..	..	6,002	Mixed	4	12	(1-e)	No	Req	16	$35
George W. Hubbard Hospital (col.)	Nashville	NPAssn	166	98	2	2,123	Rotating	6	12	July & Sept.	No	Req	26	$15
Nashville General Hospital	Nashville	City	305	85	15	6,784	Rotating	10	12	July	No	Req	35	$25
St. Thomas Hospital	Nashville	Church	225	48	52	4,380	Rotating	4	12	July	No	None	27	$40
Vanderbilt University Hospital	Nashville	NPAssn	210	68	32	4,487	Straight	10	12	July	(106)	Op	63	$23.75
TEXAS														
Hotel Dieu Hospital	Beaumont	Church	187	50	50	2,700	Mixed	2	12	July	No	Req	16	$50
Baylor University Hospital [1]	Dallas	Church	344	22	78	11,101	Rotating	12	12	July	(107)	Req	36	$25
Parkland Hospital	Dallas	County	295	97	3	9,181	Rotating	20	18	Jan. & July	No	Req	20	$10
St. Paul's Hospital	Dallas	Church	300	35	65	7,154	Rotating	8	12	July	No	Req	15	$25
El Paso City-County Hospital	El Paso	CyCo	158	100		3,393	Rotating	4	12	July	No	Req	62	$50
William Beaumont General Hospital	El Paso	Army	519	100		3,020	Rotating	2	12	July	No	Op	58	(d)
City and County Hospital	Fort Worth	CyCo	115	100		3,051	Rotating	4	12	July	No	Req	27	$25
Harris Clinic-Hospital	Fort Worth	Indiv	160	..	..	1,056	Mixed	3	12	July	No	Req	19	No
St. Joseph's Hospital	Fort Worth	Church	202	41	59	3,167	Rotating	3	12	July	No	None	19	$25
John Sealy Hospital [1]	Galveston	City	374	77	23	5,676	Rotating	8	12	June & July	(108)	Req	52	No
St. Mary's Infirmary	Galveston	Church	165	20	80	3,447	Mixed	3	12	June	No	None	25	$30
Hermann Hospital	Houston	NPAssn	399	75	25	5,297	Rotating	6	12	July	No	Req	47	$25
Jefferson Davis Hospital [1]	Houston	CyCo	204	100		7,827	Rotating	10	12	July	No	Req	27	$25
Medical and Surgical Hospital	San Antonio	NPAssn	115	2	98	2,811	Mixed	3	12	July	No	Req	31	$25
Robert B. Green Memorial Hospital	San Antonio	County	135	100		3,218	Rotating	9	12	June	No	Req	21	$10
Santa Rosa Hospital	San Antonio	Church	386	38	62	4,250	Mixed	6	12	July	No	Req	18	$25
Station Hospital	San Antonio	Army	670	100		6,331	Rotating	12	12	July	No	Op	81	(d)
Gulf, Colorado and Santa Fe Hospital	Temple	NPAssn	150	..	..	966	Rotating	1	12	July	(109)	None	18	$50
Kings Daughters Hospital	Temple	NPAssn	118	..	..	9,882	Mixed	2	12	July	No	Req	16	$50
Scott and White Hospital	Temple	Corp	175	..	..	3,021	Rotating	6	12	July	(109)	Req	19	$40
UTAH														
Thomas D. Dee Memorial Hospital	Ogden	Church	185	9	91	5,288	Rotating	5	12	July	No	Req	15	$25
Dr. W. H. Groves Latter-Day Saints Hospital [1]	Salt Lake City	Church	466	10	90	5,730	Rotating	8	12	July	(128)	Req	16	$15(j)
Holy Cross Hospital	Salt Lake City	Church	270	24	76	2,978	Mixed	2	12	July	No	None	31	$15(m)
St. Mark's Hospital [1]	Salt Lake City	Church	135	15	85	2,275	Mixed	2	12	July	No	Req	29	$35
Salt Lake General Hospital	Salt Lake City	County	248	99	1	3,395	Mixed	8	12	July	No	Req	20	$20(l)
VERMONT														
Bishop DeGoesbriand Hospital	Burlington	Church	122	55	45	2,622	Rotating	3	12	Jan. & July	No	None	24	$25
Mary Fletcher Hospital	Burlington	NPAssn	150	67	33	3,083	Rotating	5	12	July & Sept.	No	Req	41	$50
VIRGINIA														
Hospital of St. Vincent de Paul	Norfolk	Church	250	55	45	3,877	Rotating	5	12	July	No	Req	34	$25
Norfolk Protestant Hospital	Norfolk	Church	200	55	45	5,239	Rotating	4	12	July	No	Req	32	$35
U. S. Marine Hospital	Norfolk	USPHS	300	100		2,082	Rotating	8	12	July	(110)	Op	76	(d)
Johnston-Willis Hospital	Richmond	Corp	126	8	92	3,002	Rotating	3	12	July	No	Req	23	$15
Medical College of Virginia, Hospital Division [1] (Memorial, Dooley, St. Philip and Crippled Children's Hospitals)	Richmond	NPAssn	456	89	11	9,118	Mix&Rotat	20	12	July	(111)	Req	20	No
Stuart Circle Hospital	Richmond	Corp	108	51	49	2,481	Mixed	3	12	July	No	Req	37	$25(m)
Jefferson Hospital	Roanoke	Corp	109	..	..	2,130	Mixed	2	12	July	No	Req	21	$50
University of Virginia Hospital [1]	University	State	330	69	31	6,842	Rotating	20	12	July	(112)	Req	40	No
WASHINGTON														
Columbus Hospital	Seattle	Church	236	80	20	2,706	Rotating	4	12	July	(113)	None	19	$25
King County Hospital Unit No. 1 [1] (Harborview)	Seattle	County	445	100		10,859	Rotating	24	24	July	(114)	Req	40	$30
Providence Hospital	Seattle	Church	450	15	85	5,897	Rotating	6	12	July	(115)	Req	25	$30
Seattle General Hospital	Seattle	Church	120		100	2,450	Rotating	3	12	July	(116)	None	26	$30
Swedish Hospital	Seattle	NPAssn	260	1	99	4,081	Rotating	8	12	July & Oct.	(117)	Op	29	$30
U. S. Marine Hospital	Seattle	USPHS	300	100		2,893	Rotating	6	12	July	(118)	Req	80	(d)

Numerical and other references will be found on pages 707 and 708.

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Name of Hospital	Location	Control	Capacity	Classification of Patients: Percentage: Free and Part Pay	Classification of Patients: Percentage: Full Pay	Total Patients Treated	Type of Internship	Number of Interns	Length of Service in Months	Service Commences	Affiliated Service	Outpatient Service	Autopsy Percentage	Salary per Month
WASHINGTON—Continued														
Virginia Mason Hospital	Seattle	NPAssn	180		100	3,022	Rotating	4	12	July	No	None	39	$30
Deaconess Hospital	Spokane	Church	257	..	..	4,982	Rotating	4	12	July	(119)	None	30	$25
Sacred Heart Hospital	Spokane	Church	347	60	40	6,149	Mixed	4	12	July	(120)	None	15	$25
St. Luke's Hospital [1]	Spokane	NPAssn	175	45	55	2,903	Rotating	3	12	July	(121)	None	29	$25
Northern Pacific Beneficial Asso. Hosp.	Tacoma	NPAssn	116	78	22	1,800	Mixed	2	12	July	(122)	Req	17	$25
Pierce County Hospital	Tacoma	County	220	100		3,856	Mixed	3	12	July	No	Op	21	$25-45
St. Joseph's Hospital	Tacoma	Church	350	37	63	3,091	Mixed	3	12	July	No	None	52	$30
Tacoma General Hospital	Tacoma	NPAssn	257		100	4,185	Rotating	4	12	July	(122)	Op	34	$35
WEST VIRGINIA														
Charleston General Hospital	Charleston	Corp	165	20	80	4,370	Rotating	5	12	July	No	Req	30	$25
Chesapeake and Ohio Railway Hospital	Huntington	NPAssn	130	100		2,402	Rotating	3	12	July	No	Req	24	$40
St. Mary's Hospital	Huntington	Church	120	..	..	2,267	Mixed	3	12	July	No	Op	18	$30
Ohio Valley General Hospital	Wheeling	NPAssn	270	51	49	4,469	Mixed	5	12	July	No	Req	29	$25
Wheeling Hospital	Wheeling	Church	325	45	55	2,671	Mixed	4	12	July	No	Req	15	$40
WISCONSIN														
St. Elizabeth Hospital	Appleton	Church	200	22	78	3,472	Mixed	2	12	June & July	No	None	28	$25
St. Agnes Hospital	Fond du Lac	Church	250	41	59	4,531	Mixed	4	12	June	No	None	27	$25
Mercy Hospital	Janesville	Church	150	50	50	1,900	Mixed	1	12	July	No	None	19	$25
La Crosse Lutheran Hospital	La Crosse	Church	124	25	75	2,231	Mixed	1	12	July	No	Req	19	$25
St. Francis Hospital [1]	La Crosse	Church	315	..	..	3,948	Rotating	5	12	July	No	Req	27	No
Madison General Hospital	Madison	NPAssn	160	33	67	4,046	Rotating	4	12	July	No	None	33	$25
Methodist Hospital	Madison	Church	130	27	73	2,335	Rotating	4	12	July	No	None	24	$30
St. Mary's Hospital	Madison	Church	205	44	56	4,568	Rotating	4	12	July	No	Req	44	$25
State of Wisconsin General Hospital [1]	Madison	State	652	93	7	10,221	Rotating	16	12	July	No	Op	71	No
St. Joseph's Hospital [1]	Marshfield	Church	170	26	74	3,355	Mixed	2	12	July	No	Req	27	$20
Columbia Hospital	Milwaukee	NPAssn	205	..	..	3,745	Rotating	5	24	July	(123)	Req	48	$25
Evangelical Deaconess Hospital	Milwaukee	Church	150	28	72	2,822	Rotating	3	12	June	(124)	Op	19	$25
Milwaukee Hospital "The Passavant"	Milwaukee	Church	250	72	28	5,853	Rotating	7	12	July	No	Req	36	$25
Misericordia Hospital	Milwaukee	Church	154	10	90	2,387	Mixed	2	12	July	No	None	15	$15
Mount Sinai Hospital	Milwaukee	NPAssn	170	72	28	4,220	Rotating	5	12	July	No	Req	62	$25
St. Joseph's Hospital [1]	Milwaukee	Church	365	42	58	4,645	Rotating	6	12	June	No	Req	23	$25
St. Mary's Hospital	Milwaukee	Church	255	..	..	5,998	Mixed	4	12	June	No	Op	16	$25
Mercy and St. Mary's Hospitals	Oshkosh	Church	150	..	..	2,068	Rotating	3	12	July	No	Op	27	$25
Milwaukee County General Hospital [1]	Wauwatosa	County	1,125	100		18,151	Rotating	38	12	June	No	Req	29	$10
CANAL ZONE														
Gorgas Hospital	Ancon	Fed	880	100		9,303	Rotating	8	12	July	No	Op	65	(1-y)
HAWAII														
Queen's Hospital	Honolulu	Corp	282	..	..	6,874	Rotating	6(y)	18	(1-c)	(125)	None	44	$71
PHILIPPINE ISLANDS														
Philippine General Hospital [1]	Manila	Fed	567	90	10	16,488	Rotating	31(z)	12	March	(126)	Req	74	No

Numerical and other references will be found on pages 707 and 708.

HOSPITALS APPROVED FOR INTERNSHIPS IN THE DOMINION OF CANADA

For the benefit of graduates of approved medical colleges who desire an internship in Canada, the Council on Medical Education and Hospitals of the American Medical Association has declared that hospitals which conform to the standards of the Department of Hospital Service of the Canadian Medical Association should be regarded as giving an internship equivalent in educational value to that offered by hospitals in the United States approved for intern training by the Council. It is understood, however, that this statement applies only to hospitals that are unqualifiedly "Approved" under the Canadian plan and does not apply to that group referred to as "Recommended."

The following list of hospitals, revised to Jan. 1, 1935, has been furnished by the Department of Hospital Service:

Name of Hospital	Location
Victoria General Hospital	Halifax, N. S.
St. John General Hospital	St. John, N. B.
Hospital du St. Sacrament	Quebec, Que.
Children's Memorial Hosp	Montreal, Que.
Hospital Notre Dame	Montreal, Que.
Hospital Ste. Justine	Montreal, Que.
Hotel Dieu St. Joseph	Montreal, Que.
Hospital Ste. Luc	Montreal, Que.
Montreal General Hospital	Montreal, Que.
Royal Victoria Hospital	Montreal, Que.
Woman's General Hospital	Montreal, Que.
Ottawa Civic Hospital	Ottawa, Ont.
Kingston General Hospital	Kingston, Ont.

Name of Hospital	Location
Grace Hospital	Toronto, Ont.
Hospital for Sick Children	Toronto, Ont.
St. Joseph's Hospital	Toronto, Ont.
St. Michael's Hospital	Toronto, Ont.
Toronto East General Hosp.	Toronto, Ont.
Toronto General Hospital	Toronto, Ont.
Toronto Western Hospital	Toronto, Ont.
Hamilton General Hospital	Hamilton, Ont.
St. Joseph's Hospital	London, Ont.
Victoria General Hospital	London, Ont.
Metropolitan General Hosp	Walkerville, Ont.
Hotel Dieu of St. Joseph Hosp.	Windsor, Ont.
MacKellar General Hospital	Fort William, Ont.

Name of Hospital	Location
Children's Hospital	Winnipeg, Man.
Winnipeg General Hospital	Winnipeg, Man.
St. Boniface Hospital	St. Boniface, Man.
Regina General Hospital	Regina, Sask.
Saskatoon City Hospital	Saskatoon, Sask.
Edmonton General Hospital	Edmonton, Alta.
Misericordia Hospital	Edmonton, Alta.
Royal Alexandria Hospital	Edmonton, Alta.
University of Alberta Hosp.	Edmonton, Alta.
St. Paul's Hospital	Vancouver, B. C.
Vancouver General Hospital	Vancouver, B. C.
Provincial Royal Jubilee Hosp.	Victoria, B. C.

NOTES

1. Women interns admitted.
2. Women interns only.
(a) In lieu of maintenance.
(b) Bonus of $110.
(c) Bonus of $10 for satisfactory records.
(d) Salary established by government pay tables.
(e) $25 per month for first 11 months; $85 the twelfth month.
(f) Bonus of $25.
(g) Bonus of $180.
(h) Bonus of $100.
(i) Bonus of $120.
(j) Bonus of $60.
(k) $25 per month second year.
(m) Bonus of $50.
(n) Bonus of $300.
(o) Bonus of $150.
(p) $300 per year less deductions.
(q) $25 per month first year; $50 per month second year; bonus of $100.
(r) Bonus of $50 on completion of 29 months' service.
(s) $15 per month for 6 months; $20 for 12 months; bonus of $100.
(t) Bonus of $125.
(u) $20 per month after completion of 12 months' service.
(v) Bonus of $200.
(w) Bonus of $75.
(x) Bonus of $250.
(y) Prefer aspirants going into foreign missions or boys born and raised in Hawaii.
(z) All internships reserved for the fifth year students of the College of Medicine, University of the Philippines.
(1-a) January, April, May, July, August, October and November.
(1-b) January, March, July and November.
(1-c) Quarterly.
(1-d) April, July and November.
(1-e) Every two months.
(1-f) January, April and July.
(1-g) January, July and October.
(1-h) January, June, July and September.
(1-i) July, August and September.
(1-j) Surgery: March, July and November. Medicine: January, April, June and September.
(1-k) January, May and September.
(1-m) January, February, June, July and October.
(1-n) June, July and August.
(1-o) Every six weeks.
(1-p) July, September and November.
(1-q) January, July and September.
(1-r) July, August, September and October.
(1-s) March, June, September and December.
(1-t) March, July and November.
(1-u) February, July and November.
(1-v) January, June and September.
(1-w) July, August, September, November and December.
(1-x) April, June and August.
(1-y) Appointments made by chief of office, The Panama Canal, Washington, D. C. Net salary $70 per month.

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Affiliation as Referred to in Column Headed: "Affiliated Service"

3. Patton State Hospital, Patton, psychiatry.
4. Los Angeles Receiving Hospital, emergency service.
5. Children's Hospital and Los Angeles County Hospital, pediatrics and obstetrics.
6. Los Angeles County Hospital, surgery, medicine, pathology and pediatrics.
7. Internship in these hospitals includes service in Alameda County Hospital, Oakland, Fairmont Hospital, San Leandro, and Arroyo Sanatorium, Livermore.
8. Woman's Hospital, Pasadena, obstetrics.
9. Napa State Hospital, Imola, and Hassler Health Home, Redwood City, psychiatry and tuberculosis.
10. St. Francis Hospital, San Francisco, obstetrics and pediatrics.
11. San Francisco Hospital, obstetrics, gynecology and pediatrics.
12. White Memorial Hospital, Los Angeles, obstetrics, pediatrics and surgery.
13. Santa Barbara General Hospital.
14. Santa Barbara Cottage Hospital, diabetes and medicine.
15. St. Joseph's Hospital and Children's Hospital, Denver, obstetrics and pediatrics.
16. Fitzsimons General Hospital, Denver, tuberculosis.
17. Municipal Hospitals, Department of Communicable Diseases, Hartford.
18. Columbia Hospital for Women and Lying-In Asylum, Washington.
19. Gallinger Municipal Hospital, Children's Hospital, and Providence Hospital, Washington, pediatrics, obstetrics and surgery
20. Columbia Hospital for Women and Lying-In Asylum, and Children's Hospital, Washington, obstetrics and pediatrics.
21. Grady Hospital, Atlanta, pediatrics.
22. Grady Hospital, Atlanta, obstetrics.
23. Misericordia Hospital and Home for Infants, Chicago, obstetrics, gynecology and pediatrics.
24. Winfield Sanitarium, Winfield, tuberculosis.
25. Internship in the University of Chicago Clinics includes service in Albert Merritt Billings Hospital, Bobs Roberts Memorial Hospital, Nancy Adele McElwee Memorial and Gertrude Dunn Hicks Memorial Hospital and Max Epstein Clinic; also Chicago Lying-In Hospital.
26. Peoria State Hospital and Peoria Municipal Tuberculosis Sanitarium.
27. The Indiana University Hospitals include the Robert W. Long Hospital, the James Whitcomb Riley Hospital for Children, the William H. Coleman Hospital for Women and the Indiana Rotary Convalescent Home.
28. Broadlawns, Des Moines, tuberculosis and communicable disease units.
29. Watkins Memorial Hospital, Lawrence.
30. Sedgwick County Hospital, Wichita, general and outpatient.
31. Salvation Army Home and Hospital and Sedgwick County Hospital, Wichita, obstetrics and general.
32. Children's Free Hospital, Louisville, pediatrics.
33. Louisville City Hospital, Children's Free Hospital, Louisville, and Waverly Hills Sanatorium, Waverly Hills.
34. Charity Hospital and Touro Infirmary, New Orleans, pediatrics, gynecology and obstetrics.
35. Johns Hopkins Hospital, Baltimore, pathology.
36. Johns Hopkins Hospital, Baltimore, urology.
37. University Hospital and Sydenham Hospital, Baltimore, obstetrics, pediatrics and communicable diseases.
38. Sydenham Hospital, communicable diseases.
39. Boston City Hospital includes the Main Hospital, South Department for Contagious Diseases, Haymarket Square Relief Station, East Boston Relief Station and the Sanatorium Division for Tuberculosis.
40. Boston State Hospital and Boston Psychopathic Hospital, psychiatry.
41. Evangeline Booth Maternity Hospital and Home, Boston.
42. Shriners Hospital for Crippled Children, Health Department Hospital and Wesson Maternity Hospital, Springfield, orthopedics, communicable diseases and obstetrics.
43. Herman Kiefer Hospital, Detroit.
44. Herman Kiefer Hospital, obstetrics and communicable diseases, and Children's Hospital, pediatrics.
45. Herman Kiefer Hospital, tuberculosis and communicable diseases, and St. Joseph's Retreat, Dearborn, neurology and psychiatry.
46. Children's Hospital, Detroit, pediatrics.
47. Sunshine Sanatorium and City General Hospital, Grand Rapids, tuberculosis and general.
48. Ingham Sanatorium and Boys' Vocational School Hospital, Lansing, tuberculosis and otolaryngology.
49. Miller Memorial Hospital, Duluth, outpatient service.
50. Gillette State Hospital for Crippled Children, St. Paul.
51. Glen Lake Sanatorium, Oak Terrace, tuberculosis.
52. Children's Hospital, St. Paul, pediatrics.
53. St. Anthony's Hospital, St. Louis, obstetrics, gynecology and pediatrics.
54. St. Louis Maternity Hospital, St. Louis City Hospital and City Isolation Hospital, obstetrics, medicine and communicable diseases.
55. Jewish Sanatorium, Robertson, tuberculosis.
56. Alexian Brothers Hospital, St. Louis, outpatient service.
57. Robert Koch Hospital and City Sanitarium, St. Louis, tuberculosis and psychiatry.
58. St. Louis City Hospital, pathology.
59. St. Mary's Group of Hospitals includes St. Mary's Hospital, Firmin Desloge Hospital and Mt. St. Rose Sanatorium.
60. St. Elizabeth Hospital, Elizabeth, obstetrics and gynecology.
61. Margaret Hague Maternity Hospital, Jersey City, obstetrics.
62. New Jersey State Hospital, Marlboro, and Allenwood Sanatorium, Allenwood, psychiatry and tuberculosis.
63. "Bergen Pines" Bergen County Hospital, Ridgewood, tuberculosis and communicable diseases.
64. Trenton Municipal Hospital, tuberculosis.
65. Anthony N. Brady Maternity Hospital, Albany.
66. Kingston Avenue Hospital, Brooklyn, communicable diseases.
67. St. Mary's Hospital and Providence Retreat, Buffalo, obstetrics and psychiatry.
68. Children's Hospital, Buffalo, pediatrics.
69. Ulster County Tuberculosis Hospital, Kingston.
70. Our Lady of Victory Infants' Home, Lackawanna, obstetrics and pediatrics.
71. Jewish Maternity Hospital, New York City.
72. New York Ophthalmic Clinic, New York City.
73. Perth Amboy General Hospital, obstetrics, gynecology and pediatrics.
74. Syracuse Memorial Hospital, City Hospital, and Syracuse Psychopathic Hospital, obstetrics, communicable diseases and psychiatry.
75. Forsyth County Tuberculosis Sanatorium, Winston-Salem.
76. Children's Hospital, Akron, pediatrics and orthopedics.
77. Catherine Booth Home and Hospital, Cincinnati, obstetrics, gynecology and pediatrics.
78. Children's Hospital, Cincinnati, pediatrics.
79. Christian R. Holmes Hospital, Hamilton County Tuberculosis Sanatorium, and Hamilton County Home and Chronic Disease Hospital, Cincinnati.
80. Longview State Hospital, Cincinnati, psychiatry.
81. Cincinnati General Hospital, pediatrics and otolaryngology.
82. St. Anne's Maternity Hospital, Cleveland.
83. Mt. Sinai Hospital, Cleveland.
84. City Hospital, Cleveland, psychiatry and communicable diseases.
85. University Hospitals of Cleveland include the Lakeside Hospital, Maternity Hospital, Babies and Childrens Hospital, Cleveland, and the Rainbow Hospital for Crippled and Convalescent Children, South Euclid.
86. Philadelphia Hospital for Contagious Diseases.
87. Starling-Loving University Hospital and Children's Hospital, Columbus, obstetrics and pediatrics.
88. Stillwater Sanatorium, Dayton, tuberculosis.
89. Shriners Hospital for Crippled Children, Portland, orthopedics.
90. University of Oregon Medical School Hospitals include Multnomah Hospital and Doernbecher Memorial Hospital for Children.
91. Allentown State Hospital, psychiatry.
92. Hospital of the University of Pennsylvania, Philadelphia, obstetrics.
93. Children's Hospital of the Mary J. Drexel Home, Philadelphia, pediatrics.
94. Henry Phipps Institute of the University of Pennsylvania, Philadelphia, tuberculosis.
95. Children's Hospital, Philadelphia, pediatrics.
96. Shriners Hospital for Crippled Children and Philadelphia Hospital for Contagious Diseases.
97. Pennsylvania Hospital, Department for Mental and Nervous Diseases.
98. Municipal Hospital for Contagious Diseases, Pittsburgh.
99. Rosalia Foundling and Maternity Hospital and Municipal Hospital for Contagious Diseases, Pittsburgh.
100. Elizabeth Steel Magee Hospital, Children's Hospital, and Eye and Ear Hospital, Pittsburgh, obstetrics, gynecology, pediatrics and eye and ear.
101. Berks County Tuberculosis Sanatorium, Reading.
102. Pittston Hospital, Pittston, obstetrics.
103. Providence Lying-In Hospital.
104. Children's Hospital and Pine Breeze Sanatorium, Chattanooga, pediatrics and tuberculosis.
105. Eastern State Hospital and Beverly Hills Sanatorium, Knoxville, neurology, psychiatry and tuberculosis.
106. William Parker Hospital, New York City, pediatrics.
107. Bradford Memorial Hospital for Babies, Dallas, pediatrics.
108. Galveston State Psychopathic Hospital.
109. Gulf, Colorado and Santa Fe Hospital and the Scott and White Hospital affiliated furnish one internship.
110. Norfolk Protestant Hospital, Florence Crittenton Home, and Children's Clinic of the Kings Daughters, Norfolk, obstetrics and pediatrics.
111. Pine Camp Hospital, Brook Hill, tuberculosis and orthopedics.
112. Blue Ridge Sanatorium, Charlottesville, tuberculosis.
113. King County Tuberculosis Hospital, Seattle.
114. Includes service in King County Hospital, Unit No. 2, Seattle.
115. King County Hospital, Unit No. 1, Seattle, outpatient service.
116. Children's Orthopedic Hospital and Florence Crittenton Home, Seattle, orthopedics, pediatrics and obstetrics.
117. Children's Orthopedic Hospital, Seattle, and Firland Sanatorium, Richmond Beach, pediatrics, orthopedics, tuberculosis and communicable diseases.
118. King County Hospital, Unit No. 1, Seattle, obstetrics, gynecology and pediatrics.
119. Edgecliff Sanatorium and Shriners Hospital for Crippled Children, Spokane, tuberculosis and orthopedics.
120. Edgecliff Sanatorium, Spokane, tuberculosis.
121. Edgecliff Sanatorium and Salvation Army Women's Hospital and Home, Spokane, tuberculosis and obstetrics.
122. Pierce County Hospital, Tacoma.
123. Milwaukee Children's Hospital and South View Isolation Hospital, Milwaukee, pediatrics and communicable diseases.
124. Milwaukee Children's Hospital, pediatrics.
125. Kauikeolani Children's Hospital, Honolulu, pediatrics.
126. Santol Tuberculosis Sanatorium, Santol.
127. Health Department Hospital, Springfield, tuberculosis and communicable diseases.
128. Utah State Hospital, Provo, psychiatry.

HOSPITALS APPROVED FOR RESIDENCIES IN SPECIALTIES

By the Council on Medical Education and Hospitals of the American Medical Association

Revised to Aug. 31, 1935

Note.—The following hospitals are considered in position to furnish acceptable residencies in the several specialties designated, for graduates who have already had a general internship or its equivalent in practice. A list of hospitals approved for internships will be found on pages 690-708. Statistical material is based on reports received for the calendar year 1934. Reported salaries should be verified through correspondence with individual hospitals.

The abbreviations under the column headed "Control" are as follows:

CyCo	City and county	Fed	Federal	NPAssn	Nonprofit association
Corp	Corporation unrestricted as to profit	Frat	Fraternal	Part	Partnership
		Indiv	Individual	USPHS	United States Public Health Service

HOSPITALS, 392; RESIDENCIES, 2,563

		Control	Capacity	Classification of Patients: Percentage: Free	Part Pay	Full Pay	Patients Treated Under Listed Specialty	Outpatient Service	Number of Residencies	Time of Appointment	Length of Service in Months	Number of Autopsies	Autopsy Percentage	Salary per Month
ANESTHESIA														
Massachusetts General Hospital	Boston	NPAssn	416	53	33	14	.....	.....	1	Varies	12	....	59	$41.66
Jersey City Hospital	Jersey City	City	900	94	..	6	.....	.....	1	Jan. & July	12	188	15	$50
Grasslands Hospital	Valhalla, N. Y.	County	903	88	2	10	.....	.....	1	Jan. & July	12	327	72	Varies
State University Hospitals	Oklahoma City	State	742	52	39	9	.....	.....	1	Dec.	12	147	39	$25
Philadelphia General Hospital	Philadelphia	City	2,500	100	..	..	.....	.....	1	Jan.	12	1,926	48	$100
State of Wisconsin General Hospital	Madison	State	652	86	7	7	.....	.....	3	Jan.	12	254	71	$50
CARDIOLOGY														
Indiana University Hospitals	Indianapolis	State	480	83	..	17	.....	Yes	1	Jan.	12	145	48	$33.33
Pennsylvania Hospital	Philadelphia	NPAssn	560	42	33	25	.....	Yes	1	Varies	12	183	45	$25-60
St. Francis Hospital	Pittsburgh	Church	537	30	23	47	.....	Yes	1	Nov.	12	134	36	$50
COMMUNICABLE DISEASES														
Los Angeles County Hosptial	Los Angeles	County	3,410	100	..	..	.....	.....	3	Jan. & July	18	2,497	59	$10
Hospital for Children	San Francisco	NPAssn	259	12	20	68	250	....	1	Jan.	12	29	31	$25
Municipal Hospitals	Hartford, Conn.	City	335	85	10	5	.....	....	1	Feb.	12	117	50	$100
Municipal Contagious Disease Hospital	Chicago	City	428	100	..	..	4,634	....	2	Varies	12	114	75	$150
Boston City Hospital	Boston	City	1,762	85	14	1	1,234	....	3	Varies	Indef.	740	24	$83.33
Belmont Hospital	Worcester, Mass.	City	275	71	..	29	.....	....	1	Varies	12-36	19	35	$133.33
Herman Kiefer Hospital	Detroit	City	1,400	98	..	2	3,398	....	7	Varies	12	155	29	$125
City Isolation Hospital	St. Louis	City	250	92	3	5	2,084	....	1	April	12	96	32	$75
Essex County Hosp. for Contag. Dis.	Belleville, N. J.	County	500	96	4	..	2,400	....	2	Varies	Indef.	37	44	$200
Kingston Avenue Hospital	Brooklyn	City	410	100	..	..	3,411	....	9	Varies	Indef.	42	24	$100
Willard Parker Hospital	New York City	City	424	100	..	..	3,996	....	7	Varies	12	95	49	$100
City Hospital	Cleveland	City	1,600	100	..	..	.....	Yes	1	Jan.	12	635	40	$87
DERMATOLOGY-SYPHILOLOGY														
Los Angeles County Hospital	Los Angeles	County	3,410	100	..	..	.....	Yes	2	Jan. & July	18	2,497	59	$10
Cook County Hospital [2]	Chicago	County	3,522	100	..	..	.....	No	2	Jan. & July	24	1,300	18	None
University of Chicago Clinics	Chicago	NPAssn	262	25	70	5	.....	Yes	1	Varies	12	175	70	Varies
Massachusetts General Hospital	Boston	NPAssn	416	53	33	14	.....	Yes	1	Varies	12	....	59	$41.66
University Hospital	Ann Arbor	State	1,285	75	..	25	.....	Yes	1	Jan.	12	376	52	$25
Minneapolis General Hospital [1]	Minneapolis	City	681	80	15	5	386	Yes	1	Jan. or July	36	481	50	$25
Barnard Free Skin and Cancer Hosp.	St. Louis	NPAssn	44	100	..	..	.....	Yes	1	Dec.	12	19	68	$25
Kings County Hospital	Brooklyn	City	3,240	67	..	33	1,513	Yes	1	Jan. & July	12	760	17	..[4]
Buffalo City Hospital [5]	Buffalo	CyCo	1,063	66	30	4	673	Yes	2	Feb.	..	352	35	$50
Metropolitan Hospital [3]	New York City	City	1,620	100	..	..	752	Yes	1	July	12	281	25	$75
Montefiore Hosp. for Chronic Diseases	New York City	NPAssn	711	95	..	5	.....	Yes	1	July	12	354	69	$25
Cincinnati General Hospital	Cincinnati	City	925	81	13	6	448	Yes	1	Feb.	12-24	734	41	Up to $27.50
City Hospital	Cleveland	City	1,600	100	..	..	.....	Yes	2	Jan.	24	635	40	$87
University Hospitals	Cleveland	NPAssn	539	40	9	51	448	Yes	1	Jan.	12[8]	373	63	$25
University of Virginia Hospital	University	State	330	20	49	31	.....	Yes	1	Dec.	24	134	40	$50
EPILEPSY														
Monson State Hospital	Palmer, Mass.	State	1,510	100	..	..	1,400	Yes	1	Varies	Indef.	20	30	$158.33
Craig Colony	Sonyea, N. Y.	State	2,129	95	5	..	2,644	....	3	Varies	Indef.	56	44	None
FRACTURES														
Cook County Hospital	Chicago	County	3,522	100	..	..	.....	No	3	Jan. & July	12	1,300	18	None
Rhode Island Hospital	Providence	NPAssn	600	75	..	25	353	No	1	Varies	12	299	43	$41.66
GYNECOLOGY (Also see Obstetrics-Gynecology)														
Los Angeles County Hospital	Los Angeles	County	3,410	100	..	..	.....	Yes	3	Jan. & July	18	2,497	59	$10
Freedmen's Hospital (col.)	Washington, D. C.	Fed	374	87	..	13	648	Yes	1	.....	12	104	31	...
Passavant Memorial Hospital	Chicago	NPAssn	348	5	2	93	.....	No	1	Jan. & July	12	54	64	None
Indiana University Hospitals	Indianapolis	State	480	83	..	17	834	Yes	1	Jan.	12	145	48	$33.33
Johns Hopkins Hospital	Baltimore	NPAssn	800	56	20	24	1,194	Yes	5	June	12[7]	457	75	$20.83
University Hospital	Baltimore	State	450	54	26	20	426	Yes	1	Dec.	12	121	37	$25
Jersey City Hospital	Jersey City	City	900	94	..	6	1,344	Yes	2	Jan. & July	24	188	15	$50
Albany Hospital	Albany, N. Y.	NPAssn	585	6	83	11	1,725	Yes	1	Feb.	12	237	60	$50
Buffalo City Hospital [3, 5]	Buffalo	CyCo	1,063	66	30	4	1,021	Yes	2	Feb.	..	352	35	$50
Buffalo General Hospital	Buffalo	NPAssn	467	13	34	53	1,012	Yes	1	July	12	170	35	$25
Mount Sinai Hospital	New York City	NPAssn	780	76	..	24	.....	Yes	2	Varies	12	389	46	$45
N. Y. Post-Grad. Med. School & Hosp.	New York City	NPAssn	415	12	5	83	442	Yes	1	Dec.	12	81	26	$90.25
Sloane Hospital for Women	New York City	NPAssn	322	..	..	..	1,036	Yes	1	Varies	12	3	16	$50
Woman's Hospital	New York City	NPAssn	303	5	57	38	.....	Yes	1	Varies	Indef.	33	59	$118.75
University Hospitals	Cleveland	NPAssn	539	40	9	51	1,188	Yes	3	Varies	12[8]	373	63	$25
Graduate Hospital of the Univ. of Pa.	Philadelphia	NPAssn	475	39	9	52	700	Yes	1	Jan. to April	12	101	44	None
Hospital of the Univ. of Pennsylvania	Philadelphia	State	594	35	24	41	1,123	Yes	1	Jan. & Feb.	12	211	64	None
Elizabeth Steel Magee Hospital	Pittsburgh	NPAssn	427	33	27	40	896	Yes	1	Jan.	12	54	34	$41.66
Memphis General Hospital	Memphis, Tenn.	City	400	90	10	..	859	Yes	1	July	12	258	18	$25
INDUSTRIAL SURGERY														
Indianapolis City Hospital	Indianapolis	City	572	97	2	1	14,411	Yes	1	March	12	385	43	$20.81
LEPROSY														
U. S. Marine Hospital	Carville, La.	USPHS	425	100	..	..	374	Yes	4	Varies	Indef.	13	52	..[8]
MALIGNANT DISEASES														
Los Angeles County Hospital	Los Angeles	County	3,410	100	..	..	.....	Yes	2	Jan. & July	24	2,497	59	$10
Albert Steiner Clinic for Cancer and Allied Diseases	Atlanta, Ga.	City	30	100	..	..	.....	No	2	July	24	26	100	...

Numerical references will be found on page 720.

		Control	Capacity	Classification of Patients Percentage: Free	Part Pay	Full Pay	Patients Treated Under Listed Specialty	Outpatient Service	Number of Residencies	Time of Appointment	Length of Service in Months	Number of Autopsies	Autopsy Percentage	Salary per Month
MALIGNANT DISEASES—(Continued)														
Michael Reese Hospital	Chicago	NPAssn	629	53	28	19	.....	Yes	3	Jan. & July	12	230	47	$100
Collis P. Huntington Memorial Hosp.	Boston	NPAssn	25	17	8	75	1,541	Yes	4	Sept.	Indef.	12	66	$45
Pondville Hospital	Walpole, Mass.	State	122	50	..	50	1,087	Yes	6	Varies	Indef.	173	61	$150
Barnard Free Skin and Cancer Hosp.	St. Louis	NPAssn	44	100	..	..	.....	Yes	1	Dec.	12	19	68	$25
Jersey City Hospital	Jersey City	City	900	94	..	6	359	Yes	1	Jan. & July	12	188	15	$50
Memorial Hospital for the Treatment of Cancer and Allied Diseases [1]	New York City	NPAssn	109	7	71	22	2,360	Yes	9	Jan. & July	36	84	59	$125
New York City Cancer Institute Hosp.	New York City	City	192	..	..	..	852	No	4	Varies	12	172	36	$30
Jeanes Hospital	Philadelphia	NPAssn	68	24	54	22	515	Yes	2	April	24	60	72	$50
MAXILLOFACIAL SURGERY														
Graduate Hospital of the Univ. of Pa.	Philadelphia,[8]	NPAssn	475	39	9	52	.....	Yes	1	Jan. to April	12	101	44	None
MEDICINE														
Hillman Hospital	Birmingham, Ala.	County	479	100	..	..	1,930	Yes	1	Jan.	12	269	28	$36
Employees' Hospital of the Tennessee Coal, Iron and Railroad Co.	Fairfield, Ala.	Corp	310	..	..	100	1,470	Yes	1	Jan.	12	119	47	$100
Fresno County General Hospital	Fresno, Calif.	County	228	98	2	..	2,525	Yes	2	Jan.	12	261	43	$60
Cedars of Lebanon Hospital	Los Angeles	NPAssn	288	20	3	77	1,077	Yes	1	Dec.	12	118	42	$100
Los Angeles County Hospital	Los Angeles	County	3,410	100	..	..	.....	Yes	4	Jan. & July	36	2,497	59	$10
White Memorial Hospital	Los Angeles	Church	134	1	68	31	900	Yes	1	July	36	42	33	$60
San Bernardino County Charity Hosp.	San Bernardino, Calif.	County	328	100	..	..	1,416	Yes	1	Jan.	12	137	44	$75
Hospital for Children	San Francisco	NPAssn	59	12	20	68	1,964	Yes	1	Jan.	12	29	31	$25
Mount Zion Hospital	San Francisco	NPAssn	189	19	14	67	1,271	No	1	Feb.	12	78	47	$50
San Francisco Hospital	San Francisco	CyCo	1,451	100	..	..	2,666	No	7	Feb. or March	12	571	41	$50
Stanford University Hospitals	San Francisco	NPAssn	323	8	43	49	2,207	Yes	4	Jan.	12	79	43	$25
University of California Hospital	San Francisco	State	268	68	2	32	1,075	Yes	4	Feb.	12	133	76	$25
Santa Clara County Hospital	San Jose, Calif.	County	497	98	2	..	.....	Yes	1	Jan.	12	216	50	$100
Colorado General Hospital	Denver	State	178	75	25	..	800	No	1	Dec.	12	162	79	$80
Denver General Hospital	Denver	CyCo	589	..	..	..	1,201	No	1	Jan. or July	12	219	28	$50
New Haven Hospital	New Haven, Conn.	NPAssn	400	37	23	40	1,109	Yes	5	Jan. & July	12	188	48	$100
Central Disp. and Emergency Hospital	Washington, D. C.	NPAssn	240	29	14	57	.....	No	2	Jan. or Feb.	12	53	31	$50
Freedmen's Hospital (col.)	Washington, D. C.	Fed	374	87	..	13	624	Yes	1	.....	12	104	31	...
Gallinger Municipal Hospital	Washington, D. C.	City	754	99	1	..	3,839	No	2	Jan.	12	556	40	$30-50
Grady Hospital, Emory University Division (colored unit)	Atlanta, Ga.	City	263	100	..	..	1,598	Yes	3	Jan.	24	157	22	$50
University Hospital	Augusta, Ga.	City	270	51	5	44	1,821	Yes	3	July	12	161	30	$50
Cook County Hospital	Chicago	County	3,522	100	..	..	.....	No	5	Jan. & July	60	1,300	18	None
Passavant Memorial Hospital	Chicago	NPAssn	348	5	2	93	.....	No	2	Jan. & July	12	54	64	None
Presbyterian Hospital	Chicago	Church	462	24	48	28	2,475	Yes	1	Varies	24	178	38	None
Provident Hospital (col.)	Chicago	NPAssn	155	56	8	36	1,243	Yes	1	July	12	51	34	$50
Research and Educational Hospital	Chicago	State	382	100	..	..	935	Yes	2	July	12 [7]	197	91	$50
St. Luke's Hospital	Chicago	Church	639	4	20	76	1,767	Yes	4	Jan.	12	124	40	None
University of Chicago Clinics	Chicago	NPAssn	262	25	70	5	.....	Yes	5	Varies	12	175	70	Varies
Evanston Hospital	Evanston, Ill.	NPAssn	271	7	54	39	.....	Yes	1	March	12	77	72	...
Indiana University Hospitals	Indianapolis	State	480	83	..	17	697	Yes	2	Jan.	12	145	48	$33.33
University Hospitals	Iowa City	State	954	84	8	8	.....	Yes	6	Jan.	12 [7]	267	50	Up to $70.83
Bell Memorial Hospital	Kansas City, Kan.	State	250	45	44	11	1,640	No	3	Dec.	12 [7]	193	78	$45
Louisville City Hospital	Louisville, Ky.	City	586	100	..	..	2,350	Yes	8	Feb.	36	332	32	$12.50 [10]
Charity Hospital	New Orleans	State	1,913	100	..	..	16,885	Yes	5	July	24-48	1,384	58	$25
Touro Infirmary	New Orleans	NPAssn	366	30	38	32	1,140	Yes	1	Jan.	12	110	38	$25
Baltimore City Hospitals (General)	Baltimore	City	760	100	..	..	1,739	Yes	6	Jan.	12	357	33	$50
Church Home and Infirmary	Baltimore	Church	184	23	59	18	982	Yes	1	Dec.	12	43	42	$30
Johns Hopkins Hospital	Baltimore	NPAssn	860	56	20	24	2,308	Yes	6	June	12 [7]	457	75	$20.83
Maryland General Hospital	Baltimore	Church	229	43	6	51	.....	No	1	Jan.	12	33	16	$35
Mercy Hospital	Baltimore	Church	290	44	20	36	915	Yes	2	Jan.	12	63	27	$50
Provident Hosp. and Free Disp. (col.)	Baltimore	NPAssn	129	85	5	10	.....	No	1	Dec.	12	21	17	$25
St. Agnes' Hospital	Baltimore	Church	223	40	29	31	1,795	Yes	1	Dec.	12	57	26	None
St. Joseph's Hospital [14]	Baltimore	Church	290	47	11	42	865	No	1	Dec.	12	66	40	None
Sinai Hospital	Baltimore	NPAssn	269	40	8	52	1,158	No	1	Jan.	12	70	28	$47.50
South Baltimore General Hospital	Baltimore	NPAssn	115	35	38	27	362	Yes	1	Dec.	12	20	16	$25
Union Memorial Hospital	Baltimore	NPAssn	336	19	31	50	1,564	Yes	3	Jan.	12	91	38	$12.50
University Hospital	Baltimore	State	450	54	26	20	878	Yes	3	Dec.	12	121	37	$25
West Baltimore General Hospital	Baltimore	NPAssn	200	34	..	66	320	Yes	1	Jan.	12	15	19	$20
Beth Israel Hospital	Boston	NPAssn	215	..	..	..	1,450	No	2	Varies	12	129	53	...
Boston City Hospital	Boston	City	1,762	85	14	1	9,740	Yes	10	Varies	12 [7]	740	24	$83.33
Long Island Hospital	Boston	City	471	100	..	..	1,466	No	2	June	12	77	42	$112.50
Massachusetts General Hospital	Boston	NPAssn	416	53	33	14	.....	Yes	6	Varies	12	...	59	$41.66
Massachusetts Memorial Hospitals	Boston	NPAssn	307	24	42	34	378	Yes	1	March	12	83	41	$62.50
Peter Bent Brigham Hospital	Boston	NPAssn	246	28	33	39	1,800	Yes	5	Varies	24	220	75	$41.66
University Hospital	Ann Arbor, Mich.	State	1,285	75	..	25	.....	Yes	8	Jan.	12	346	52	...
Battle Creek Sanitarium	Battle Creek, Mich.	NPAssn	1,000	3	41	56	.....	No	1	March	12	7	29	$125 [11]
City of Detroit Receiving Hospital	Detroit	City	714	90	10	..	5,272	Yes	2	Jan.	12	624	33	$83.33
Grace Hospital	Detroit	NPAssn	443	32	44	24	.....	Yes	1	July & Sept.	12	125	25	$37.50
Harper Hospital	Detroit	NPAssn	770	13	..	87	1,714	No	1	Feb.	12	165	22	$20.30
Henry Ford Hospital	Detroit	NPAssn	610	46	54	..	.....	Yes	4	March	12	151	44	$110
Jefferson Clinic and Diagnostic Hosp.	Detroit	NPAssn	63	5	15	80	.....	Yes	1	Feb.	24	8	20	$50
Providence Hospital	Detroit	Church	385	26	62	12	1,202	No	1	Jan.	12	104	28	$100
Dr. William J. Seymour Hospital	Eloise, Mich.	County	1,508	100	..	..	5,108	Yes	2	March	24	387	33	$37.50
Hurley Hospital	Flint, Mich.	City	425	..	..	..	.....	No	1	May	12	164	24	$50
Minneapolis General Hospital [1]	Minneapolis	City	681	80	15	5	2,505	Yes	6	Jan. & July	36	481	50	$25
Ancker Hospital	St. Paul	CyCo	1,030	100	..	..	.....	Yes	4	March	12	530	59	$50
Barnes Hospital	St. Louis	Church	270	3	9	66	2,334	Yes	3	Dec.	12	168	54	$25
Jewish Hospital	St. Louis	NPAssn	290	28	54	18	.....	No	2	Nov.	12	64	33	$40
St. Louis City Hospital	St. Louis	City	806	100	..	..	5,743	Yes	4	March	12	764	42	$100
St. Louis City Hospital No. 2 (col.)	St. Louis	City	340	100	..	..	1,470	No	2	June	36	361	41	$100
St. Luke's Hospital	St. Louis	Church	210	15	25	60	835	Yes	1	Dec.	12	41	30	$50
St. Mary's Group of Hospitals	St. Louis	Church	605	28	33	39	2,074	Yes	6	April	36	240	41	$25
Jersey City Hospital	Jersey City	City	900	94	..	6	3,830	Yes	2	Jan. & July	24	188	15	$50
Albany Hospital	Albany, N. Y.	NPAssn	585	6	83	11	1,551	Yes	4	Feb.	12	257	60	$50
Cumberland Hospital	Brooklyn	City	318	100	..	..	1,238	Yes	1	July	12	197	42	$100
Kings County Hospital	Brooklyn	City	3,240	67	..	33	10,388	Yes	4	Jun. & July	12	760	17	5
Long Island College Hospital	Brooklyn	NPAssn	480	17	34	49	1,332	Yes	2	Jan.	12	158	39	$50
Norwegian Lutheran Deaconesses' Home and Hospital	Brooklyn	Church	194	13	38	49	.....	Yes	1	March	12	78	31	None
Buffalo City Hospital [5]	Buffalo	CyCo	1,063	66	30	4	2,069	Yes	2	Feb.	..	332	35	$50
Buffalo General Hospital	Buffalo	NPAssn	467	13	34	53	1,966	Yes	7	July	24	170	35	$25
Millard Fillmore Hospital	Buffalo	NPAssn	309	24	32	44	1,296	Yes	2	Dec.	12	115	39	$50
Clifton Springs Sanitarium and Clinic	Clifton Springs, N. Y.	NPAssn	482	10	30	60	.....	No	1	Varies	12	25	50	$50
Charles S. Wilson Memorial Hospital	Johnson City, N. Y.	NPAssn	230	1	5	94	845	Yes	1	Dec.	12	98	60	$50
Metropolitan Life Insurance Co. Sanat.	Mt. McGregor, N. Y.	Corp	360	100	..	..	568	.....	2	Varies	Indef.	2	25	$100
Bellevue Hospital	New York City	City	2,418	100	..	..	12,314	Yes	4	July	12	985	27	$83.33

Numerical references will be found on page 720.

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		Control	Capacity	Classification of Patients Percentage: Free	Part Pay	Full Pay	Patients Treated Under Listed Specialty	Outpatient Service	Number of Residencies	Time of Appointment	Length of Service in Months	Number of Autopsies	Autopsy Percentage	Salary per Month
MEDICINE—(Continued)														
Fifth Avenue Hospital	New York City	NPAssn	340	22	22	56	683	Yes	1	Jan.	12	28	20	$50
Metropolitan Hospital	New York City	City	1,620	100	..	..	2,882	Yes	2	July	24	281	25	$100
Montefiore Hosp. for Chronic Diseases	New York City	NPAssn	711	95	..	5	.....	Yes	3	Jan. & July	12	354	69	$30
Mount Sinai Hospital	New York City	NPAssn	780	76	..	24	.....	Yes	1	Varies	12	389	46	$45
New York Hospital	New York City	NPAssn	1,150	11	64	25	1,479	Yes	8	Feb.	12	204	57	$25
N. Y. Post-Grad. Med. School & Hosp.	New York City	NPAssn	415	12	5	83	1,336	Yes	1	Dec.	12	81	26	$80.25
Presbyterian Hospital	New York City	NPAssn	648	37	34	29	2,944	Yes	3	Jan. & July	..	217	41	.....
Rochester General Hospital	Rochester, N. Y.	NPAssn	361	27	12	61	.....	Yes	1	April	12	173	67	$25
Strong Memorial and Rochester Municipal Hospitals	Rochester, N. Y.	NP-Cty	579	12	40	48	3,046	Yes	6	Jan.	12	372	67	$41.66
Hospital of the Good Shepherd	Syracuse, N. Y.	NPAssn	242	3	46	51	.....	No	2	Dec.	12	89	38	$37.50
Grasslands Hospital	Valhalla, N. Y.	County	965	88	2	10	965	Yes	1	Jan. & July	12	327	72	Varies
Duke Hospital	Durham, N. C.	NPAssn	456	66	23	11	2,249	Yes	5	Jan.	36-48	182	61	$12.50
Davis Hospital	Statesville, N. C.	Corp	132	30	20	50	.....	Yes	1	Jan. to March	24	12	24	Varies
City Hospital [12]	Akron, O.	City	350	41	8	51	3,307	Yes	1	Feb.	12	246	60	$0
Cincinnati General Hospital	Cincinnati	City	925	13	13	6	3,263	Yes	10	Feb.	12-36	734	41	Up to $27.50
Deaconess Hospital	Cincinnati	Church	175	6	44	50	732	Yes	1	Dec.	12	68	35	$75
Good Samaritan Hospital	Cincinnati	Church	535	20	52	28	2,430	Yes	1	Jan.	12	75	18	$50
Jewish Hospital	Cincinnati	NPAssn	262	20	44	36	2,010	Yes	1	Dec.	12	50	27	$110
City Hospital	Cleveland	City	1,090	100	..	..	2,534	Yes	5	Jan.	24	635	40	$87
Mount Sinai Hospital	Cleveland	NPAssn	270	34	58	8	1,142	Yes	1	Dec.	12	79	35	$50
St. Alexis Hospital	Cleveland	Church	220	30	4	66	932	No	1	Dec.	12	56	23	$50
St. John's Hospital	Cleveland	Church	297	13	8	79	848	No	1	Dec.	12	54	28	$30
St. Luke's Hospital	Cleveland	Church	392	23	4	73	1,226	Yes	2	Dec.	12 †	80	24	$25
University Hospitals [13]	Cleveland	NPAssn	539	40	9	51	2,907	Yes	9	Varies	12 †	373	63	$25
Starling-Loving University Hospitals	Columbus, O.	State	276	50	18	32	.....	Yes	2	Dec.	12	141	47	$25
Miami Valley Hospital	Dayton, O.	NPAssn	343	..	..	..	1,430	No	1	Jan.	12	246	58	$100
State University Hospitals [14]	Oklahoma City	State	522	52	39	9	1,449	Yes	2	Dec.	12	147	39	$25
Univ. of Oregon Med. School Hosps. [15]	Portland	County	295	100	..	..	1,302	Yes	2	Feb.	24	173	49	$30
Geo. F. Geisinger Memorial Hospital	Danville, Pa.	NPAssn	198	17	29	54	1,189	No	1	Jan.	12	66	33	$90
Graduate Hospital of the Univ. of Pa.	Philadelphia	NPAssn	475	39	9	52	1,212	Yes	1	Jan. to April	12	101	44	None
Hospital of the Univ. of Pennsylvania	Philadelphia	State	594	35	24	41	1,939	Yes	1	Jan. & Feb.	12	311	64	None
Jewish Hospital	Philadelphia	NPAssn	426	34	11	55	2,561	No	1	Feb.	12	137	43	None
Pennsylvania Hospital	Philadelphia	NPAssn	360	42	33	25	1,455	Yes	2	Varies	12	183	45	$25-60
Philadelphia General Hospital	Philadelphia	City	2,360	100	..	..	.....	Yes	1	Jan.	12	1,926	48	$100
Allegheny General Hospital	Pittsburgh	NPAssn	405	67	2	31	905	No	1	Jan.	12	84	25	$81
Mercy Hospital [16]	Pittsburgh	Church	670	30	35	35	2,161	Yes	3	Nov.	12	126	27	.....
St. Francis Hospital	Pittsburgh	Church	537	25	47	28	1,532	Yes	1	Nov.	12	134	36	$50
Western Pennsylvania Hospital	Pittsburgh	NPAssn	651	46	..	54	2,484	Yes	1	Jan. to March	12	96	27	$83.33
Reading Hospital	Reading, Pa.	Corp	208	52	3	45	5,158	Yes	1	Jan.	12	142	61	$83.33
Roper Hospital	Charleston, S. C.	NPAssn	325	66	6	28	1,723	No	1	Jan.	12	243	42	$40
Memphis General Hospital	Memphis, Tenn.	City	400	90	10	..	2,804	Yes	3	July	12	258	18	$25
Nashville General Hospital [14]	Nashville, Tenn.	City	305	85	..	15	2,146	Yes	2	Dec.	12	163	35	$35
Vanderbilt University Hospital	Nashville, Tenn.	NPAssn	110	31	37	32	1,150	No	3	July	12	164	63	$35.40
Baylor University Hospital	Dallas, Tex.	Church	344	11	11	78	1,701	Yes	1	April	12	109	36	$100
Norfolk Protestant Hospital	Norfolk, Va.	Church	200	25	30	45	.....	Yes	1	Jan.	12	51	32	$35
Medical College of Va., Hosp. Division	Richmond	NPAssn	456	9	80	11	1,370	Yes	3	Dec.	12	122	20	$50
University of Virginia Hospital	University	State	330	20	49	31	1,533	Yes	2	Dec.	24	134	40	$50
State of Wisconsin General Hospital	Madison	State	652	86	7	7	.....	Yes	3	Jan.	12	254	71	$50
St. Joseph's Hospital	Milwaukee	Church	365	16	16	68	895	Yes	1	Jan.	12	40	19	$100
MENTAL DEFICIENCIES														
Belchertown State School	Belchertown, Mass.	State	1,300	99	1	..	1,372	Yes	1	Varies	Indef.	7	44	$165
Michigan Home and Training School	Lapeer, Mich.	State	3,825	100	..	..	1,591	Yes	2	Varies	24	13	20	$150
Polk State School	Polk, Pa.	State	3,000	92	6	2	2,991	No	1	June	12	29	44	$75
METABOLIC DISEASES														
Philadelphia General Hospital	Philadelphia	City	2,560	100	..	..	.....	Yes	1	Jan.	12	1,926	48	$100
MIXED														
Golden State Hosptal	Los Angeles	Indiv	72	5	3	92	902	Yes	3	Varies	Indef.	7	47	$110
St. Luke's Hospital	San Francisco	Church	225	9	10	81	5,698	Yes	6	Feb.	12	47	26	$50
Fairmont Hospital of Alameda County	San Leandro, Calif.	County	900	100	..	..	2,428	No	2	July	12	207	55	$125
James M. Jackson Memorial Hospital	Miami, Fla.	City	330	61	..	39	732	Yes	2	July	12	91	16	$75
Emory University Hospital	Emory University, Ga.	NPAssn	166	4	15	81	3,183	No	1	Jan.	12	22	25	$100
West Suburban Hospital	Oak Park, Ill.	NPAssn	427	..	..	..	6,962	Yes	1	March to May	12	70	35	$25
Indianapolis City Hospital [17]	Indianapolis	City	572	97	2	1	2,799	Yes	4	March	12	585	43	$20.81
Massachusetts Memorial Hospitals	Boston	NPAssn	907	24	42	34	6,961	Yes	1	March	24	83	41	$42.50
St. Mary's Hospital	Grand Rapids, Mich.	Church	253	31	8	61	4,427	Yes	1	March	12	66	24	$50
Atlantic City Hospital	Atlantic City, N. J.	NPAssn	316	49	24	27	5,980	Yes	2	Jan.	12	119	23	$75
Arnot-Ogden Memorial Hospital	Elmira, N. Y.	NPAssn	213	8	49	43	4,187	Yes	1	Jan.	12	52	36	$75
Jamaica Hospital	Jamaica, N. Y.	NPAssn	173	5	39	56	5,499	Yes	1	Jan. & July	12	58	21	$100
Genesee Hospital	Rochester, N. Y.	NPAssn	225	36	24	40	4,349	No	2	Dec.	12	56	30	$50
Rochester General Hospital	Rochester, N. Y.	NPAssn	361	27	12	61	7,259	Yes	4	April	12	173	67	$25
James Walker Memorial Hospital	Wilmington, N. C.	NPAssn	152	57	7	36	4,646	Yes	1	Jan.	12	43	18	$100
St. Thomas Hospital	Akron, O.	Church	183	22	39	39	2,340	No	1	Dec. or Jan.	12	70	36	.....
Charity Hospital	Cleveland	Church	301	39	..	61	.....	Yes	3	Jan.	12	161	45	$50
Women's and Children's Hospital	Toledo, O.	NPAssn	141	5	68	27	1,685	No	2	Feb.	12	34	37	$25
Youngstown Hospital	Youngstown, O.	NPAssn	474	28	29	43	7,302	No	2	Jan.	12	119	29	$100
St. Anthony Hospital	Oklahoma City	Church	200	13	51	36	952	Yes	1	Jan.	12	70	33	$30
Presbyterian Hospital	Philadelphia	Church	425	42	11	47	3,457	Yes	1	Varies	12	107	41	.....
Baroness Erlanger Hospital	Chattanooga, Tenn.	CyCo	246	68	2	30	.....	No	1	Dec.	12	68	18	$50
Knoxville General Hospital	Knoxville, Tenn.	City	380	69	..	31	7,254	Yes	1	.....	12	75	18	$100
Medical Arts Hospital	Dallas, Tex.	Indiv	54	..	..	100	2,071	Yes	1	June	12	6	29	$75
Hermann Hospital	Houston, Tex.	NPAssn	109	75	..	25	3,347	Yes	2	March	12	87	47	$100
Salt Lake General Hospital	Salt Lake City	County	248	97	2	1	3,305	No	1	March	12	73	20	$50
Jefferson Hospital	Roanoke, Va.	Corp	109	..	..	..	2,130	Yes	2	Jan.	12	24	21	$50
NEUROLOGY														
Los Angeles County Hospital [28]	Los Angeles	County	3,410	100	..	..	.....	Yes	1	Jan. & July	24	2,497	59	$10
University Hospitals	Iowa City	State	264	84	8	8	.....	Yes	2	Jan.	12	267	50	Up to $70.83
Boston City Hospital	Boston	City	1,762	85	14	1	1,019	No	2	Varies	12	740	24	$83.33
Massachusetts General Hospital	Boston	NPAssn	416	53	33	14	.....	Yes	1	Varies	12	.....	59	$41.66
University Hospital	Ann Arbor, Mich.	State	1,285	75	..	25	.....	Yes	1	Jan.	12	376	52	$25
Bellevue Hospital	New York City	City	2,418	100	..	..	288	Yes	4	July	12	985	27	$83.33
Central Neurological Hospital	New York City	City	470	100	..	..	1,432	....	6	Jan. & July	12	.....	22	$100
Lenox Hill Hospital [18]	New York City	NPAssn	600	45	..	55	32	Yes	1	Varies	12	139	42	$25
Metropolitan Hospital	New York City	City	1,620	100	..	..	417	Yes	1	July	12	281	25	$75
Montefiore Hosp. for Chronic Diseases	New York City	NPAssn	711	95	..	5	.....	Yes	3	Jan. & July	18	354	69	$30
Mount Sinai Hospital	New York City	NPAssn	780	76	..	24	.....	Yes	3	Varies	12	389	46	$45
Neurological Institute of New York	New York City	NPAssn	211	11	19	70	3,381	No	12	July	12	58	48	$100
Philadelphia Orthopaedic Hospital and Infirmary for Nervous Diseases	Philadelphia	NPAssn	140	37	30	33	271	Yes	1	July	12	6	60	$40
State of Wisconsin General Hospital [19]	Madison	State	652	86	7	7	.....	Yes	1	Jan.	12	254	71	$50

Numerical references will be found on page 720.

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		Control	Capacity	Classification of Patients: Percentage: Free	Part Pay	Full Pay	Patients Treated Under Listed Specialty	Outpatient Service	Number of Residences	Time of Appointment	Length of Service in Months	Number of Autopsies	Autopsy Percentage	Salary per Month
NEUROSURGERY														
Presbyterian Hospital [19]	Chicago	Church	462	24	48	28	.....	Yes	1	Varies	12	178	58	None
Boston City Hospital	Boston	City	1,762	85	14	1	1,010	No	2	Varies	12	740	24	$83.33
Kings County Hospital	Brooklyn	City	3,240	67	..	33	.....	Yes	1	Jan. & July	12	760	17	..[4]
Neurological Institute of New York	New York City	NPAssn	211	11	19	70	.....	No	3	July	12	58	48	$100
Strong Memorial and Rochester Municipal Hospitals	Rochester, N. Y.	NP-Cy	579	12	40	48	.....	Yes	1	Jan.	12	372	67	$41.66
Medical College of Va., Hosp. Division	Richmond	NPAssn	456	9	80	11	902	Yes	2	Dec.	12	122	20	$50
OBSTETRICS (Also see Obstetrics-Gynecology)														
Los Angeles County Hospital	Los Angeles	County	3,410	100	..	..	.....	Yes	4	Jan. & July	18	2,497	59	$10
Hospital for Children	San Francisco	NPAssn	259	12	20	68	702	Yes	1	Jan.	12	29	31	$25
Santa Clara County Hospital	San Jose, Calif.	County	497	98	2	..	.....	Yes	1	Jan.	12	216	50	$100
Freedmen's Hospital (col.)	Washington, D. C.	Fed	374	87	..	13	881	Yes	1	.....	12	104	31	..
University Hospital	Augusta, Ga.	City	270	51	5	44	1,591	Yes	1	July	12	161	30	$50
Chicago Maternity Center [20]	Chicago	NPAssn		100	..	..	4,488	Yes	1	Jan.	12	3	50	None
Cook County Hospital	Chicago	County	3,522	100	..	..	.....	No	4	Jan. & July	48	1,300	18	None
Provident Hospital (col.)	Chicago	NPAssn	155	56	8	36	519	Yes	1	July	12	51	34	$50
Research and Educational Hospital	Chicago	State	282	100	..	..	831	Yes	1	July	12	197	91	$50
Indiana University Hospitals	Indianapolis	State	480	83	..	17	1,058	Yes	1	Jan.	12	145	48	$83.33
Louisville City Hospital	Louisville, Ky.	City	586	100	..	..	1,649	Yes	3	Feb.	36	332	32	$13.50 [10]
Johns Hopkins Hospital	Baltimore	NPAssn	800	56	20	24	1,630	Yes	4	June	12[7]	457	75	$20.83
Provident Hosp. and Free Disp. (col.)	Baltimore	NPAssn	129	85	5	10	.....	No	1	Dec.	12	21	17	$25
Sinai Hospital	Baltimore	NPAssn	269	40	8	52	759	No	1	Jan.	12	70	28	$4.50
University Hospital	Baltimore	State	450	54	26	20	487	Yes	2	Dec.	12	121	37	$25
Boston Lying-in Hospital	Boston	NPAssn	434	9	91	..	3,140	No	2	May & Nov.	12	34	47	$83.33
Massachusetts Memorial Hospitals	Boston	NPAssn	367	24	42	34	647	Yes	2	March	12	83	41	$92.50
Providence Hospital	Detroit	Church	365	26	62	12	1,040	No	1	Jan.	12	104	26	$100
Margaret Hague Maternity Hospital	Jersey City	County	556	66	30	4	6,025	Yes	5	Quarterly	15	98	61	$66.66
Cumberland Hospital	Brooklyn	City	318	100	..	..	1,274	Yes	1	July	12	197	42	$100
Jewish Hospital	Brooklyn	NPAssn	674	33	38	29	2,646	Yes	1	Dec.	12	252	46	$50
Methodist Episcopal Hospital	Brooklyn	Church	400	17	23	60	.....	....	2	July	18	108	26	$100
Norwegian Lutheran Deaconesses' Home and Hospital	Brooklyn	Church	194	13	38	49	.....	Yes	1	March	12	78	31	None
Buffalo City Hospital [5]	Buffalo	CyCo	1,063	66	30	4	809	Yes	2	Feb.	..	352	35	$50
Buffalo General Hospital	Buffalo	NPAssn	467	13	34	53	769	Yes	1	July	12	170	35	$25
Morrisania City Hospital	New York City	City	539	100	..	..	411	No	2	Jan. & July	12	350	58	None
Sloane Hospital for Women	New York City	NPAssn	322	..	..	..	2,770	Yes	3	Varies	12	3	16	$50
Cincinnati General Hospital	Cincinnati	City	925	81	13	6	2,284	Yes	2	Feb.	12-24	734	41	Up to $27.50
City Hospital	Cleveland	City	1,690	100	..	..	1,542	Yes	3	Jan.	24	635	40	$37
Mount Sinai Hospital	Cleveland	NPAssn	270	34	58	8	1,712	Yes	1	Dec.	12	79	37	$50
St. John's Hospital	Cleveland	Church	207	13	8	79	767	No	1	Dec.	12	54	28	$50
St. Luke's Hospital	Cleveland	Church	392	23	4	73	1,277	Yes	2	Dec.	12[7]	80	24	$25
University Hospitals	Cleveland	NPAssn	539	40	9	51	2,093	Yes	5	Varies	12[6]	343	65	$25
Miami Valley Hospital	Dayton, O.	NPAssn	343	..	..	..	881	No	1	Jan.	12	246	58	$100
State University Hospitals	Oklahoma City	State	522	52	39	9	510	Yes	1	Dec.	12	147	39	$25
Hospital of the Univ. of Pennsylvania	Philadelphia	State	594	35	24	41	921	Yes	1	Jan. & Feb.	12	211	64	None
Elizabeth Steel Magee Hospital	Pittsburgh	NPAssn	427	33	27	40	2,840	Yes	4	Jan.	12	54	34	$41.66
Memphis General Hospital	Memphis, Tenn.	City	400	90	10	..	1,869	Yes	1	July	12	256	18	$25
Baylor University Hospital	Dallas, Tex.	Church	344	11	11	78	2,051	Yes	1	April	12	109	36	$150
Medical College of Va., Hosp. Division	Richmond	NPAssn	456	9	80	11	1,017	Yes	1	Dec.	12	122	20	$50
OBSTETRICS-GYNECOLOGY (Also see Obstetrics and Gynecology)														
Hillman Hospital	Birmingham, Ala.	County	479	100	..	..	2,912	Yes	2	Jan.	12	269	28	$36
White Memorial Hospital	Los Angeles	Church	134	1	68	31	439	Yes	1	July	36	42	33	$60
San Francisco Hospital	San Francisco	CyCo	1,451	100	..	..	2,827	No	3	Feb. or March	12	571	41	$50
Stanford University Hospitals	San Francisco	NPAssn	323	8	49	43	1,289	Yes	2	Jan.	12	79	41	$25
University of California Hospital	San Francisco	State	281	68	..	32	1,066	Yes	3	Feb.	12	133	76	$25
New Haven Hospital	New Haven, Conn.	NPAssn	439	40	37	23	1,308	Yes	1	Jan. & July	12	188	48	$100
Columbia Hospital for Women and Lying-in Asylum	Washington, D. C.	Corp	200	..	58	42	3,071	Yes	4	Jan. & July	12	23	21	None
Gallinger Municipal Hospital	Washington, D. C.	City	754	99	1	..	5,097	No	2	Jan.	12	556	40	$30-50
Grady Hospital, Emory University Division (colored unit)	Atlanta, Ga.	City	263	100	..	..	4,001	Yes	1	Jan.	24	157	22	$50
Chicago Lying-in Hospital and Disp.	Chicago	NPAssn	332	30	45	25	6,308	Yes	6	Jan. & July	..	44	62	$83.33
Presbyterian Hospital	Chicago	Church	462	24	48	28	1,346	Yes	1	Varies	12	178	58	None
St. Luke's Hospital	Chicago	Church	659	4	20	76	1,642	Yes	2	Jan.	12	124	40	None
University of Chicago Clinics (see Chicago Lying-in Hosp. and Disp.)	Chicago													
University Hospitals	Iowa City	State	954	84	8	8	.....	Yes	6	Jan.	12[7]	267	50	Up to $70.83
Bell Memorial Hospital	Kansas City, Kan.	State	250	45	44	11	878	No	3	Dec.	12[7]	193	78	$45
Charity Hospital	New Orleans	State	1,913	100	..	..	9,035	Yes	2	July	24	1,384	58	$25
Touro Infirmary	New Orleans	NPAssn	366	30	38	32	1,998	Yes	2	Jan.	12	110	38	$25
Mercy Hospital	Baltimore	Church	200	49	36	15	1,869	Yes	1	Jan.	12	63	37	$50
St. Joseph's Hospital [14]	Baltimore	Church	200	47	11	42	954	No	2	Dec.	12	66	40	None
University Hospital	Ann Arbor, Mich.	State	1,285	75	..	25	.....	Yes	2	Jan.	12	376	52	$25
City of Detroit Receiving Hospital [21]	Detroit	City	714	90	10	..	1,697	Yes	2	Jan.	48	624	33	$83.33
Grace Hospital	Detroit	NPAssn	445	32	44	24	.....	Yes	1	July & Sept.	12	125	25	$37.50
Harper Hospital	Detroit	NPAssn	750	13	87	..	3,105	No	2	Feb.	12	105	22	$20.30
Herman Kiefer Hospital [22]	Detroit	City	1,400	98	..	2	3,259	No	2	Varies	12	155	29	$125
Woman's Hospital	Detroit	NPAssn	320	6	8	86	.....	Yes	2	Feb.	12	46	32	$25
Minneapolis General Hospital [1]	Minneapolis	City	681	80	15	5	2,939	Yes	2	Jan. & July	36	481	50	$25
Ancker Hospital [1]	St. Paul	CyCo	1,050	100	..	..	.....	Yes	1	March	12	530	59	$40
Jewish Hospital	St. Louis	NPAssn	290	28	54	18	.....	No	1	Nov.	12	64	33	$60
St. Louis City Hospital	St. Louis	City	806	100	..	..	5,436	Yes	3	March	12	764	42	$100
St. Louis Maternity Hospital [23]	St. Louis	NPAssn	196	28	43	29	.....	....	11	July	12	68	77	....
St. Luke's Hospital	St. Louis	Church	210	15	25	60	969	Yes	1	Dec.	12	41	30	$50
St. Mary's Group of Hospitals	St. Louis	Church	605	35	26	39	1,393	Yes	5	April	36	140	41	$25
Kings County Hospital	Brooklyn	City	3,240	67	..	33	6,002	Yes	4	Jan. & July	12	760	17	..[4]
Long Island College Hospital	Brooklyn	NPAssn	480	17	34	49	1,715	Yes	3	Jan.	12	158	39	$50
Bellevue Hospital	New York City	City	2,418	100	..	..	6,232	Yes	2	July	36	985	27	$83.33
Lenox Hill Hospital	New York City	NPAssn	600	45	..	55	2,042	Yes	1	Varies	12	139	42	$60
Metropolitan Hospital	New York City	City	1,620	100	..	..	2,331	Yes	2	July	24	281	25	0-$100
New York Hospital	New York City	NPAssn	1,150	11	64	25	4,094	Yes	10	Feb.	12	204	57	$25
Sloane Hospital for Women	New York City	NPAssn	322	..	..	..	3,806	Yes	6	Varies	12	3	16	$50
Woman's Hospital	New York City	NPAssn	303	5	57	38	.....	Yes	8	Quarterly	24	33	59	None
Strong Memorial and Rochester Municipal Hospitals	Rochester, N. Y.	NP-Cy	579	12	40	48	2,906	Yes	4	Jan.	12	372	67	$41.66
Duke Hospital	Durham, N. C.	NPAssn	456	66	23	11	1,455	Yes	3	Jan.	36-48	182	61	$12.50
Univ. of Ore. Med. School Hospitals [15]	Portland	County	395	100	..	..	1,694	Yes	3	Feb.	36	173	39	$60
Kensington Hospital for Women	Philadelphia	NPAssn	101	31	11	58	2,431	Yes	2	Jan. & July	12	18	50	$50

Numerical references will be found on page 720.

		Control	Capacity	Classification of Patients — Percentage: Free	Part Pay	Full Pay	Patients Treated Under Listed Specialty	Outpatient Service	Number of Residencies	Time of Appointment	Length of Service in Months	Number of Autopsies	Autopsy Percentage	Salary per Month
OBSTETRICS-GYNECOLOGY—(Continued)														
Pennsylvania Hospital	Philadelphia	NPAssn	560	42	33	25	3,214	Yes	2	Varies	12	183	45	$25-60
Philadelphia General Hospital	Philadelphia	City	2,560	100	..	..	.....	Yes	1	Jan.	12	1,926	48	$100
Nashville General Hospital	Nashville, Tenn.	City	305	85	..	15	1,560	Yes	2	Dec.	12	163	35	$35
Vanderbilt University Hospital	Nashville, Tenn.	NPAssn	110	31	37	32	685	No	3	July	12	164	63	$35-40
John Sealy Hospital	Galveston, Tex.	City	374	73	4	23	1,036	Yes	1	Dec.	12	168	52	None
University of Virginia Hospital	University	State	330	20	49	31	895	Yes	2	Dec.	24	134	40	$50
State of Wisconsin General Hospital	Madison	State	652	86	7	7	.....	Yes	2	Jan.	12	254	71	$50
Milwaukee County General Hospital	Wauwatosa, Wis.	County	1,125	100	..	..	2,771	Yes	1	May	12	344	29	$100
OPHTHALMOLOGY (Also see Ophthalmology-Otolaryngology)														
Los Angeles County Hospital	Los Angeles	County	3,410	100	..	..	.....	Yes	2	Jan. & July	24	2,497	59	$10
White Memorial Hospital	Los Angeles	Church	134	1	68	31	.....	Yes	1	July	12	42	33	$99
Stanford University Hospitals	San Francisco	NPAssn	223	8	45	49	466	Yes	2	Jan.	12	79	45	$25
University of California Hospitals	San Francisco	State	281	68	..	32	176	Yes	1	Feb.	12	133	76	$25
Colorado General Hospital [4]	Denver	State	178	75	25	..	130	No	1	Dec.	24	162	79	$80
New Haven Hospital	New Haven, Conn.	NPAssn	439	40	37	23	243	Yes	1	Jan. & July	12	188	48	$100
Episcopal Eye, Ear and Throat Hosp.	Washington, D. C.	Church	100	22	39	39	1,368	Yes	3	Mar., July, Nov.	12	6	29	[24]
Illinois Eye and Ear Infirmary	Chicago	State	200	100	..	..	.....	Yes	9	Varies	12	6	32	None
Michael Reese Hospital	Chicago	NPAssn	629	53	28	19	442	Yes	1	Jan. & July	12	230	47	$100
Presbyterian Hospital	Chicago	Church	402	24	48	28	189	Yes	2	Varies	12	178	58	None
University of Chicago Clinics	Chicago	NPAssn	202	25	70	5	.....	Yes	4	Varies	12	175	70	Varies
Indianapolis City Hospital	Indianapolis	City	572	97	2	1	183	Yes	1	March	12	285	43	$200
University Hospitals	Iowa City	State	954	84	8	..	.....	Yes	3	Jan.	12 [7]	267	50	Up to $70-83
Johns Hopkins Hospital	Baltimore	NPAssn	890	56	20	24	1,116	Yes	5	June	12 [7]	457	75	$20-83
Massachusetts Eye and Ear Infirmary	Boston	NPAssn	231	11	17	72	.....	Yes	7	Quarterly	21	20	47	None
University Hospital	Ann Arbor, Mich.	State	1,285	100	..	..	.....	Yes	9	Varies	12	576	52	$25
Barnes Hospital	St. Louis	Church	270	25	9	66	.....	Yes	1	Dec.	12	168	54	$25
St. Louis City Hospital	St. Louis	City	806	100	..	..	155	Yes	1	March	12	764	42	$100
Jersey City Hospital	Jersey City	City	900	94	..	6	539	Yes	1	Jan. & July	12	188	15	$50
Kings County Hospital	Brooklyn	City	3,240	67	33	149	Yes	1	Jan. & July	12	760	17	[4]	
Buffalo City Hospital [5]	Buffalo	CyCo	1,063	66	30	4	137	Yes	2	Feb.	..	352	35	$50
Bellevue Hospital	New York City	City	2,418	100	..	..	661	Yes	5	July	36	985	27	None
Herman Knapp Memorial Eye Hospital	New York City	NPAssn	50	14	75	11	835	Yes	2	.....	18	[2]	..	None
Mount Sinai Hospital	New York City	NPAssn	780	76	..	24	.....	Yes	1	Varies	12	389	456	$45
New York Eye and Ear Infirmary	New York City	NPAssn	175	15	17	77	2,772	Yes	7	March & Sept.	21	[2]	..	None
Presbyterian Hospital	New York City	NPAssn	648	37	34	29	1,701	Yes	6	Jan. & July	..	217	41	....
Strong Memorial and Rochester Municipal Hospitals	Rochester, N. Y.	NP-Cy	579	12	40	48	.....	Yes	2	Jan.	12	372	67	$41.66
Cincinnati General Hospital	Cincinnati	City	925	81	13	6	316	Yes	2	Feb.	24	734	41	Up to $27.50
City Hospital	Cleveland	City	1,690	100	..	..	164	Yes	1	Jan.	24	635	40	$37
University Hospitals	Cleveland	NPAssn	539	40	9	51	359	Yes	2	Varies	12 [6]	373	63	$25
Univ. of Oregon Med. School Hosps. [13]	Portland	County	395	100	..	..	127	Yes	1	Feb.	12	173	39	$30
Graduate Hospital of the Univ. of Pa.	Philadelphia	NPAssn	475	29	9	62	333	Yes	1	Jan. to April	12	101	44	None
Wills Hospital	Philadelphia	NPAssn	200	75	8	17	.....	Yes	7	Quarterly	21	[2]	..	None
Medical College of Va., Hosp. Division	Richmond	NPAssn	456	9	80	11	278	Yes	1	Dec.	12	122	20	$50
OPHTHALMOLOGY-OTOLARYNGOLOGY (Also see Ophthalmology and Otolaryngology)														
Hillman Hospital	Birmingham, Ala.	County	479	100	..	..	797	Yes	1	Jan.	12	269	28	$36
Hospital for Children	San Francisco	NPAssn	259	12	20	68	920	Yes	1	Jan.	12	29	31	$25
Gallinger Municipal Hospital	Washington, D. C.	City	754	99	1	..	1,030	No	1	Jan.	12	556	40	$30-50
Grady Hospital, Emory University Division (colored unit)	Atlanta, Ga.	City	263	100	..	..	732	Yes	2	Jan.	24	157	22	$50
Cook County Hospital	Chicago	County	3,522	100	..	..	.....	No	3	Jan. & July	36	1,300	18	None
Passavant Memorial Hospital	Chicago	NPAssn	348	5	2	93	.....	No	1	Jan. & July	12	54	64	None
St. Luke's Hospital	Chicago	Church	659	22	20	76	2,088	Yes	2	Jan.	12	124	49	None
Indiana University Hospitals	Indianapolis	State	480	83	..	17	1,377	Yes	2	Jan.	12	145	48	$33.33
Eye, Ear, Nose and Throat Hospital	New Orleans	Corp	70	35	50	15	.....	Yes	7	Every 2 mos.	12	2	33	None
Touro Infirmary	New Orleans	NPAssn	366	30	38	32	1,496	Yes	1	Jan.	12	110	38	$25
Baltimore Eye, Ear and Throat Charity Hospital	Baltimore	NPAssn	60	55	..	45	2,478	Yes	3	Jan.	12 24	4	44	None
University Hospital	Baltimore	State	450	54	26	20	53	Yes	1	Dec.	12	121	37	$25
Boston City Hospital	Boston	City	1,762	85	14	1	.....	No	1	Varies	12	740	24	$83.33
City of Detroit Receiving Hospital	Detroit	City	714	90	10	..	1,007	Yes	1	Jan.	12	624	33	$83.33
Grace Hospital	Detroit	NPAssn	443	32	44	24	.....	Yes	1	July & Sept.	12	125	25	$37.50
Harper Hospital	Detroit	NPAssn	750	13	..	87	2,692	No	3	Feb.	12	105	22	$80.30
Dr. William J. Seymour Hospital	Eloise, Mich.	County	1,368	100	..	..	1,102	Yes	2	March	24	387	33	$37.50
Minneapolis General Hospital [1]	Minneapolis	City	681	80	15	5	306	Yes	2	Jan. & July	36	481	59	$25
Ancker Hospital	St. Paul	CyCo	1,050	100	..	..	.....	Yes	1	March	12	530	59	$50
Jewish Hospital	St. Louis	NPAssn	290	28	54	18	.....	No	1	Nov.	12	64	35	$80
Newark City Hospital	Newark, N. J.	City	700	100	..	..	2,342	No	1	July	12	294	27	None
Newark Eye and Ear Infirmary	Newark, N. J.	NPAssn	68	44	1	55	2,775	Yes	3	Varies	12	12	39	None
Long Island College Hospital	Brooklyn	NPAssn	480	17	34	49	1,122	Yes	2	Jan.	12	138	39	$50
Harlem Eye and Ear Hospital	New York City	NPAssn	50	26	19	55	1,257	Yes	3	Varies	12	[2]	..	None
Lenox Hill Hospital	New York City	NPAssn	600	45	..	55	237	Yes	1	Varies	12	139	42	None
Manhattan Eye, Ear and Throat Hosp.	New York City	NPAssn	216	..	..	..	.....	Yes	14	Varies	18-24	8	25	None
Metropolitan Hospital	New York City	City	1,620	100	..	..	1,128	Yes	1	July	12	281	25	$100
N. Y. Polyclinic Med. School and Hosp.	New York City	NPAssn	246	70	..	30	2,173	Yes	4	Varies	24	74	34	None
N. Y. Post-Grad. Med. School and Hosp.	New York City	NPAssn	415	12	5	83	3,137	Yes	7	Dec.	28	81	26	$30.27
Grasslands Hospital	Valhalla, N. Y.	County	903	88	2	10	904	Yes	1	Jan. & July	12	327	72	Varies
Duke Hospital	Durham, N. C.	NPAssn	456	66	23	11	823	Yes	2	Jan.	24-36	182	61	$12.50
State University Hospitals	Oklahoma City	State	722	39	3	58	636	Yes	1	Dec.	12	147	39	$75
Eye and Ear Hospital	Pittsburgh	NPAssn	101	15	48	37	.....	Yes	2	.....	24	[2]	..	None
Memphis Eye, Ear, Nose and Throat Hospital	Memphis, Tenn.	NPAssn	69	46	17	37	1,837	Yes	3	March & Oct.	18	[2]	..	None
University of Virginia Hospital	University	State	330	20	49	31	1,147	Yes	2	Dec.	24	134	40	$50
State of Wisconsin General Hospital	Madison	State	652	86	7	7	.....	Yes	2	Jan.	12	254	71	$50
Milwaukee County General Hospital	Wauwatosa, Wis.	County	1,125	100	..	..	414	Yes	1	May	12	344	29	$100
ORTHOPEDICS														
Hillman Hospital	Birmingham, Ala.	County	479	100	..	..	503	Yes	1	Jan.	12	269	28	$36
Children's Hospital	Los Angeles	NPAssn	193	59	30	11	366	Yes	1	March	12	157	92	$30
Los Angeles County Hospital	Los Angeles	County	3,410	100	..	..	.....	Yes	3	Jan. & July	24	2,497	59	$10
Orthopaedic Hospital School	Los Angeles	NPAssn	83	78	16	6	1,792	Yes	5	July	12	1	33	....
Shriners Hospital	San Francisco	Frat	60	100	..	..	330	Yes	2	Jan.	12	[2]	..	$25
University of California Hospital [1]	San Francisco	State	281	68	..	32	250	Yes	1	Feb.	12	133	76	$25
New Haven Hospital	New Haven, Conn.	NPAssn	439	40	37	23	.....	Yes	1	Jan. & July	12	188	48	$100
Children's Memorial Hospital [1]	Chicago	NPAssn	264	58	41	1	.....	Yes	1	Jan.	12	97	52	$50
Cook County Hospital	Chicago	County	3,522	100	..	..	.....	No	1	Jan. & July	12	1,300	18	None
Research and Educational Hospital	Chicago	State	382	100	..	..	385	Yes	2	July	12	197	91	$40
University of Chicago Clinics	Chicago	NPAssn	202	25	70	5	.....	Yes	4	Varies	12	175	70	Varies

Numerical references will be found on page 720.

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		Control	Capacity	Classification of Patients Percentage: Free	Part Pay	Full Pay	Patients Treated Under Listed Specialty	Outpatient Service	Number of Residencies	Time of Appointment	Length of Service in Months	Number of Autopsies	Autopsy Percentage	Salary per Month
ORTHOPEDICS—(Continued)														
Indiana University Hospitals	Indianapolis	State	480	83	..	17	925	Yes	2	Jan.	12	145	48	$83.33
University Hospitals	Iowa City	State	954	84	8	8	.....	Yes	7	Jan.	12 [7]	267	50	Up to $70.83
Charity Hospital	New Orleans	State	1,913	100	..	..	872	Yes	2	July	24	1,384	58	$25
Shriners Hosp. for Crippled Children	Shreveport, La.	Frat	60	100	..	..	1,341	Yes	1	Varies	12	[2]	..	$135
Johns Hopkins Hospital	Baltimore	NPAssn	860	56	20	24	.....	Yes	3	June	12 [7]	457	75	$20.83
Boston City Hospital	Boston	City	1,762	85	14	1	.....	No	1	Varies	12	740	24	$83.33
Children's Hospital	Boston	NPAssn	283	2	59	39	568	Yes	1	Varies	12	71	44	$56.50
Massachusetts General Hospital	Boston	NPAssn	416	53	33	14	.....	Yes	1	Varies	12	...	59	$41.66
Shriners Hosp. for Crippled Children	Springfield, Mass.	Frat	60	100	..	..	380	Yes	1	July	12	[2]	..	$25
City of Detroit Receiving Hospital	Detroit	City	714	90	10	..	2,100	Yes	2	Jan.	12	624	33	$83.33
Blodgett Memorial Hospital	Grand Rapids, Mich.	NPAssn	150	20	6	74	320	Yes	1	Dec.	12	42	38	$75
Gillette State Hospital for Crippled Children	St. Paul	State	250	100	..	..	794	Yes	1	March	12	15	100	$100
University Hospitals	Columbia, Mo.	State	108	..	..	..	350	Yes	1	July	12	1	33	None
Shriners Hosp. for Crippled Children	St. Louis	Frat	100	100	..	..	430	Yes	1	Varies	12	[2]	..	..
Jersey City Hospital	Jersey City	City	900	94	..	6	1,258	Yes	2	Jan. & July	24	188	15	$50
New Jersey Orthopaedic Hospital and Dispensary	Orange	NPAssn	36	41	31	28	364	Yes	1	Varies	12	[2]	..	$50
Kings County Hospital	Brooklyn	City	3,240	67	..	33	632	Yes	1	Jan. & July	12	760	17	.. [4]
Long Island College Hospital	Brooklyn	NPAssn	480	17	34	49	336	Yes	1	Jan.	12	158	39	$50
Bellevue Hospital	New York City	City	2,418	100	..	..	67	Yes	3	July	12	985	27	None
Hospital for Joint Diseases	New York City	NPAssn	355	41	22	37	2,260	Yes	8	March	24	42	31	$25
N. Y. Orthopaedic Disp. and Hospital	New York City	NPAssn	132	..	90	9	209	Yes	8	Quarterly	12	[2]	..	$40
N. Y. Post-Grad. Med. School and Hosp.	New York City	NPAssn	415	12	5	83	1,446	Yes	1	Dec.	12	81	23	$90.25
New York Society for the Relief of the Ruptured and Crippled	New York City	NPAssn	269	13	14	73	1,723	Yes	6	Jan. & July	24	7	39	$20
Strong Memorial and Rochester Municipal Hospitals	Rochester, N. Y.	NP-Cy	579	12	40	48	.....	Yes	1	Jan.	12	372	67	$41.66
Sea View Hospital	Staten Island, N. Y.	City	1,446	..	..	..	154	....	2	Jan. & July	12	255	44	$100
New York State Reconstruction Home	West Haverstraw	State	310	..	..	100	235	Yes	3	Jan. & July	18	[2]	..	$100-150
Duke Hospital	Durham, N. C.	NPAssn	456	66	23	11	446	Yes	2	Jan.	36-48	182	61	$12.50
Cincinnati General Hospital	Cincinnati	City	925	81	13	6	1,401	Yes	1	Feb.	12	734	41	Up to $27.50
Mount Sinai Hospital	Cleveland	NPAssn	270	34	58	8	.....	Yes	1	Dec.	12	79	35	$50
University Hospitals	Cleveland	NPAssn	539	40	9	51	475	Yes	1	Varies	12 [7]	373	63	$25
State University Hospitals	Oklahoma City	State	522	52	39	9	793	Yes	4	Dec.	12	147	39	$25
Shriners Hosp. for Crippled Children	Portland, Ore.	Frat	50	100	..	..	329	Yes	1	Jan.	12	[2]	..	$50
Philadelphia Orthopaedic Hospital and Infirmary for Nervous Diseases	Philadelphia	NPAssn	140	37	30	33	284	Yes	1	July	12	6	60	$40
Willis C. Campbell Clinic [1, 25]	Memphis, Tenn.	Part	40	..	..	..	.....	Yes	3	Jan. & July	24	[2]	..	$50
Texas Scottish Rite Hospital for Crippled Children	Dallas	Frat	42	100	..	..	594	Yes	1	Jan.	12	[2]	..	$100
University of Virginia Hospital	University	State	330	20	49	31	391	Yes	2	Dec.	24	134	40	$50
State of Wisconsin General Hospital	Madison	State	652	86	7	7	.....	Yes	3	Jan.	12	254	71	$50
OTOLARYNGOLOGY (Also see Ophthalmology-Otolaryngology)														
Children's Hospital	Los Angeles	NPAssn	193	59	30	11	.....	Yes	1	March	12	157	92	$60
Los Angeles County Hospital	Los Angeles	County	3,410	100	..	..	.....	Yes	3	Jan. & July	24	2,497	59	$10
White Memorial Hospital	Los Angeles	Church	134	1	68	31	.....	Yes	1	July	12	42	33	$60
San Francisco Hospital	San Francisco	CyCo	1,451	100	..	..	1,669	No	2	Feb. or March	12	571	41	$50
Stanford University Hospitals	San Francisco	NPAssn	323	8	43	49	1,407	Yes	2	Jan.	12	79	43	$25
University of California Hospital	San Francisco	State	281	68	..	32	753	Yes	1	Feb.	12	133	76	$25
New Haven Hospital	New Haven, Conn.	NPAssn	439	40	37	23	1,013	Yes	2	Jan. & July	12	188	48	$100
Episcopal Eye, Ear and Throat Hosp.	Washington, D. C.	Church	100	22	39	39	4,437	Yes	3	Mar., July, Nov.	12	6	29	.. [24]
Illinois Eye and Ear Infirmary	Chicago	State	200	100	..	..	.....	Yes	9	Varies	12	6	32	None
Presbyterian Hospital	Chicago	Church	462	24	48	28	1,946	Yes	1	Varies	12	178	58	None
Research and Educational Hospital	Chicago	State	382	100	..	..	1,030	Yes	1	July	12	197	91	$50
University of Chicago Clinics	Chicago	NPAssn	262	25	70	5	.....	Yes	3	Varies	12	175	70	Varies
Indianapolis City Hospital	Indianapolis	City	572	97	2	1	1,898	Yes	1	March	12	385	43	$20-81
University Hospitals	Iowa City	State	954	84	8	8	.....	Yes	11	Jan.	12 [7]	267	50	Up to $70.83
Charity Hospital	New Orleans	City	1,913	100	..	..	3,656	Yes	3	July	24	1,384	58	$25
Johns Hopkins Hospital	Baltimore	NPAssn	860	56	20	24	.....	Yes	2	June	12 [7]	457	75	$20.83
Beth Israel Hospital	Boston	NPAssn	215	..	..	..	1,092	No	1	Varies	12	129	53	....
Massachusetts Eye and Ear Infirmary	Boston	NPAssn	231	11	17	72	.....	Yes	7	Quarterly	21	20	47	None
Memorial Hospital	Worcester, Mass.	NPAssn	215	15	8	77	1,178	Yes	1	March or April	12	64	40	$41.66
University Hospital	Ann Arbor, Mich.	State	1,285	75	..	25	.....	Yes	2	Jan.	12	376	52	$25
Barnes Hospital	St. Louis	Church	270	25	9	66	.....	Yes	1	Dec.	12	168	54	$25
St. Louis City Hospital	St. Louis	City	806	100	..	..	1,422	Yes	1	March	12	764	42	$100
Jersey City Hospital	Jersey City	City	900	94	..	6	3,001	Yes	2	Jan. & July	24	188	15	$150
Kings County Hospital	Brooklyn	City	3,240	67	..	33	3,320	Yes	2	Jan. & July	12	760	17	.. [4]
Buffalo City Hospital [5]	Buffalo	CyCo	1,063	66	30	4	1,070	Yes	2	Feb.	..	352	35	$50
Buffalo General Hospital	Buffalo	NPAssn	467	13	34	53	1,143	Yes	1	July	12	170	35	$25
Bellevue Hospital	New York City	City	2,418	100	..	..	3,148	Yes	6	July	12	985	27	$83.33
Mount Sinai Hospital	New York City	NPAssn	780	76	1	24	.....	Yes	2	Varies	12	389	46	$45
New York Eye and Ear Infirmary	New York City	NPAssn	175	15	8	77	2,307	Yes	7	March & Sept.	21	[2]	..	None
Strong Memorial and Rochester Municipal Hospitals	Rochester, N. Y.	NP-Cy	579	12	40	48	.....	Yes	2	Jan.	12	372	67	$41.66
Sea View Hospital	Staten Island, N. Y.	City	1,446	..	..	..	2,880	....	2	Jan. & July	12	255	44	$100
Cincinnati General Hospital	Cincinnati	City	925	81	13	6	1,401	Yes	2	Feb.	24	734	41	Up to $27.50
City Hospital	Cleveland	City	1,050	100	..	..	1,280	Yes	2	Jan.	24	635	40	$37
St. Luke's Hospital	Cleveland	Church	392	23	4	73	1,390	Yes	2	Dec.	12 [7]	80	24	$25
University Hospitals	Cleveland	NPAssn	539	40	9	51	1,846	Yes	3	Varies	12 [6]	373	63	$25
Univ. of Ore. Med. School Hospitals [13]	Portland	County	395	100	..	..	373	Yes	1	Feb.	12	173	39	$30
Graduate Hospital of the Univ. of Pa.	Philadelphia	NPAssn	475	39	9	52	2,821	Yes	1	Jan. to April	12	101	44	None
Medical College of Va., Hosp. Division	Richmond	NPAssn	456	9	80	11	1,169	Yes	1	Dec.	12	122	20	$50
PATHOLOGY														
Hillman Hospital	Birmingham, Ala.	County	479	100	..	..	.....	Yes	1	Jan.	12	269	28	$36
Los Angeles County Hospital	Los Angeles	County	3,410	100	..	..	.....	Yes	2	Jan. & July	24	2,497	59	$10
White Memorial Hospital	Los Angeles	Church	134	1	68	31	.....	Yes	1	July	12	42	33	$60
Mount Zion Hospital	San Francisco	NPAssn	189	19	14	67	.....	No	2	Feb.	12	78	47	$50
San Francisco Hospital	San Francisco	CyCo	1,451	100	..	..	.....	No	1	Feb. or March	12	571	41	$50
University of California Hospital	San Francisco	State	281	68	..	32	.....	Yes	1	Feb.	12	133	76	$25
Denver General Hospital	Denver	CyCo	589	..	..	..	.....	No	1	Jan. or July	12	219	28	$50
New Haven Hospital	New Haven, Conn.	NPAssn	439	40	37	23	.....	Yes	2	Jan. & July	12	188	48	$100
Gallinger Municipal Hospital	Washington, D. C.	City	754	99	1	..	.....	No	2	Jan.	12	556	40	$30-50
Garfield Memorial Hospital	Washington, D. C.	Corp	311	..	42	58	.....	Yes	1	Dec.	12	70	30	$0
Children's Memorial Hospital	Chicago	NPAssn	264	58	41	1	.....	Yes	1	Jan. & July	12	97	52	$50
Cook County Hospital	Chicago	County	3,522	100	..	..	.....	No	4	Jan. & July	48	1,300	18	None
Michael Reese Hospital	Chicago	NPAssn	629	53	28	19	.....	Yes	1	Jan. & July	12	230	47	$100
Presbyterian Hospital [1]	Chicago	Church	462	24	48	28	.....	Yes	2	Varies	12	178	58	None
Research and Educational Hospital	Chicago	State	382	100	..	..	.....	Yes	1	July	12	197	91	$50
St. Luke's Hospital [1]	Chicago	Church	659	4	20	76	.....	Yes	1	Jan.	12	124	40	None

Numerical references will be found on page 720.

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		Control	Capacity	Classification of Patients Percentage: Free	Part Pay	Full Pay	Patients Treated Under Listed Specialty	Outpatient Service	Number of Residencies	Time of Appointment	Length of Service in Months	Number of Autopsies	Autopsy Percentage	Salary per Month
PATHOLOGY—(Continued)														
University of Chicago Clinics	Chicago	NPAssn	262	25	70	5	.....	Yes	1	Varies	12	175	70	Varies
Evanston Hospital	Evanston, Ill.	NPAssn	271	7	54	39	.....	Yes	1	March	12	77	72	....
Indianapolis City Hospital	Indianapolis	City	572	97	2	1	.....	Yes	1	March	12	385	43	$20.81
Indiana University Hospitals	Indianapolis	State	480	83	..	17	.....	Yes	1	Jan.	12	145	48	$33.33
Methodist Episcopal Hospital	Indianapolis	Church	600	..	..	..	.....	No	1	Dec.	12	129	28	....
University Hospitals	Iowa City	State	954	84	8	8	.....	Yes	1	Jan.	12	267	50	Up to $70.83
Bell Memorial Hospital	Kansas City, Kan.	State	250	45	44	11	.....	No	1	Dec.	12 [7]	193	78	$45
Louisville City Hospital	Louisville, Ky.	State	586	100	..	..	.....	Yes	2	Feb.	24	332	32	$13.50 [10]
Charity Hospital	New Orleans	State	1,913	100	..	..	.....	Yes	1	July	24	1,384	58	$25
Touro Infirmary	New Orleans	NPAssn	366	30	38	32	.....	Yes	1	Jan.	12	110	38	$25
Baltimore City Hospitals (General)	Baltimore	City	760	100	..	..	.....	Yes	2	Jan.	12	357	33	$50
Johns Hopkins Hospital	Baltimore	NPAssn	860	56	20	24	.....	Yes	3	June	12 [7]	457	75	$20.83
Beth Israel Hospital	Boston	NPAssn	215	..	..	..	.....	No	2	Varies	12	129	53	....
Boston City Hospital	Boston	City	1,762	85	14	1	.....	No	5	Varies	Indef.	740	54	$83.33
Children's Hospital	Boston	NPAssn	283	2	59	39	.....	Yes	1	Varies	12	71	44	$56.50
Massachusetts General Hospital	Boston	NPAssn	416	53	33	14	.....	Yes	1	Varies	12	....	59	$41.66
New England Deaconess Hospital	Boston	Church	285	8	64	28	.....	Yes	1	Jan.	12	156	65	$25
Peter Bent Brigham Hospital	Boston	NPAssn	246	28	33	39	.....	Yes	2	Varies	12	220	75	$41.66
University Hospital	Ann Arbor, Mich.	State	1,285	75	..	25	.....	Yes	1	Jan.	12	376	52	$25
City of Detroit Receiving Hospital	Detroit	City	714	90	10	..	.....	Yes	1	Jan.	12	624	33	$83.33
Ancker Hospital	St. Paul	CyCo	1,050	100	..	..	.....	Yes	1	March	12	530	59	$50
Barnes Hospital	St. Louis	Church	270	25	9	66	.....	Yes	1	Dec.	12	168	54	$25
St. Louis City Hospital	St. Louis	City	606	100	..	..	.....	Yes	1	March	12	764	42	$100
Newark Beth Israel Hospital	Newark, N. J.	NPAssn	414	21	22	57	.....	No	2	May	24	181	45	$25
Albany Hospital	Albany, N. Y.	NPAssn	585	6	83	11	.....	Yes	2	Feb.	12	257	60	$50
Bender Hygienic Laboratory [23]	Albany, N. Y.	NPAssn	....	..	..	..	.....	....	2	Varies	12	....	..	$75
Kings County Hospital	Brooklyn	City	3,500	67	..	33	.....	Yes	1	Jan. & July	12	760	17	.. [4]
Long Island College Hospital	Brooklyn	NPAssn	480	17	34	49	.....	Yes	1	Jan.	12	158	39	$50
Buffalo City Hospital [5]	Buffalo	CyCo	1,063	66	30	4	.....	Yes	4	Feb.	..	352	35	$50
Buffalo General Hospital	Buffalo	NPAssn	467	13	34	53	.....	Yes	1	July	12	170	35	$25
Lenox Hill Hospital	New York City	NPAssn	600	..	..	55	.....	Yes	1	Varies	12	139	42	None
Lincoln Hospital	New York City	City	265	100	..	..	.....	Yes	1	July	12	222	36	None
Montefiore Hosp. for Chronic Diseases	New York City	NPAssn	711	95	..	5	.....	Yes	3	July	12	354	69	$50
Mount Sinai Hospital	New York City	NPAssn	780	76	..	24	.....	Yes	2	Varies	12	389	46	$45
New York Hospital	New York City	NPAssn	1,150	11	64	25	.....	Yes	1	Feb.	12	264	57	$25
N.Y. Post-Grad. Med. School and Hosp.	New York City	NPAssn	413	12	81	7	.....	Yes	1	Dec.	12	81	56	$90.25
Presbyterian Hospital	New York City	NPAssn	648	37	34	29	.....	Yes	2	Jan. & July	..	217	41	....
St. Luke's Hospital	New York City	Church	540	59	..	41	.....	No	1	Varies	12	183	49	$83.33
Willard Parker Hospital	New York City	City	424	100	..	..	.....	No	1	Varies	12	95	49	$100
Strong Memorial and Rochester Municipal Hospitals	Rochester, N. Y.	NP-Cy	579	12	40	48	.....	Yes	3	Jan.	12	372	67	$41.66
Grasslands Hospital	Valhalla, N. Y.	County	903	88	2	10	.....	Yes	1	Jan. & July	12	327	72	Varies
Duke Hospital	Durham, N. C.	NPAssn	456	66	23	11	.....	Yes	3	Jan.	36-48	182	61	$12.50
Cincinnati General Hospital	Cincinnati	City	925	81	13	6	.....	Yes	4	Feb.	12-24	734	41	Up to $27.50
City Hospital	Cleveland	City	1,690	100	..	..	.....	Yes	4	Jan.	24	635	40	$37
Mount Sinai Hospital	Cleveland	NPAssn	270	34	58	8	.....	Yes	1	Dec.	12	79	37	$50
St. Luke's Hospital	Cleveland	Church	392	23	4	73	.....	Yes	2	Dec.	24	80	24	$25
University Hospitals	Cleveland	NPAssn	539	40	9	51	.....	Yes	2	Varies	12 [6]	343	63	$25
Miami Valley Hospital	Dayton, O.	NPAssn	343	..	..	..	.....	Yes	1	Jan.	12	246	58	$100
Univ. of Ore. Med. School Hospitals [15]	Portland	County	395	100	..	..	.....	Yes	2	Feb.	12	173	39	$30
Graduate Hospital of the Univ. of Pa.	Philadelphia	NPAssn	475	39	9	52	.....	Yes	1	Jan. to April	12	101	44	None
Hospital of the Univ. of Pennsylvania	Philadelphia	State	594	35	24	41	.....	Yes	1	Jan. & Feb.	12	211	64	None
Pennsylvania Hospital	Philadelphia	NPAssn	560	42	33	25	.....	Yes	1	Varies	12	183	45	$25-60
Philadelphia General Hospital	Philadelphia	City	2,560	100	..	..	.....	Yes	2	Jan.	12	1,920	48	$100
Presbyterian Hospital	Philadelphia	Church	425	42	11	47	.....	Yes	1	Varies	12	107	41	....
Allegheny General Hospital	Pittsburgh	NPAssn	405	67	2	31	.....	No	2	Jan.	12	84	25	$81
Children's Hospital	Pittsburgh	NPAssn	196	55	12	33	.....	Yes	1	Jan. & July	12	44	28	$35
Mercy Hospital	Pittsburgh	Church	670	30	35	35	.....	Yes	2	Nov.	12	126	27	....
St. Francis Hospital	Pittsburgh	Church	537	30	23	47	.....	Yes	2	Nov.	12	134	36	$50
Reading Hospital	Reading, Pa.	Corp	268	52	3	45	.....	Yes	1	Jan.	12	142	61	$83.33
Rhode Island Hospital	Providence	NPAssn	600	75	..	25	.....	No	1	Varies	12	299	43	$41.66
Memphis General Hospital	Memphis, Tenn.	City	780	90	10	..	.....	Yes	2	July	12	298	18	$25
Vanderbilt University Hospital	Nashville, Tenn.	NPAssn	110	31	37	32	.....	No	2	July	12	104	63	$35.40
PEDIATRICS														
Children's Hospital	Los Angeles	NPAssn	193	59	30	11	3,847	Yes	8	March	12	157	92	$90
Los Angeles County Hospital	Los Angeles	County	3,410	100	..	..	.....	Yes	3	Jan. & July	36	2,497	59	$10
White Memorial Hospital	Los Angeles	Church	154	1	68	31	.....	Yes	1	July	36	42	33	$60
Children's Hospital of the East Bay	Oakland, Calif.	Corp	65	2	61	37	1,709	Yes	2	Feb.	12	19	41	$75
Hospital for Children	San Francisco	NPAssn	239	12	20	68	401	Yes	1	Jan.	12	29	31	$25
San Francisco Hospital	San Francisco	CyCo	1,451	100	..	..	1,056	No	2	Feb. or March	12	571	41	$50
Stanford University Hospitals	San Francisco	NPAssn	323	8	43	49	473	Yes	2	Jan.	12	79	43	$25
University of California Hospital	San Francisco	State	281	..	32	68	538	Yes	2	Feb.	12	133	76	$25
Children's Hospital	Denver	NPAssn	165	42	27	31	4,522	No	5	Dec.	12	75	73	$50
New Haven Hospital	New Haven, Conn.	NPAssn	439	40	37	23	232	Yes	3	Jan. & July	12	188	48	$100
Children's Hospital	Washington, D. C.	NPAssn	182	48	..	52	4,139	Yes	9	Jan. & July	12	113	38	$10 [19]
Freedmen's Hospital (col.)	Washington, D. C.	Fed.	374	49	..	13	556	Yes	1	.....	12	104	31	....
Gallinger Municipal Hospital	Washington, D. C.	City	754	99	1	..	2,042	No	2	Jan.	12	556	40	$90-50
Grady Hospital, Emory University Division (colored unit)	Atlanta, Ga.	City	263	100	..	..	414	Yes	1	Jan.	12	157	92	$50
Henrietta Egleston Hosp. for Children	Atlanta, Ga.	NPAssn	52	60	8	32	862	Yes	2	Jan. & July	12	50	70	$27
University Hospital	Augusta, Ga.	City	270	51	5	44	431	Yes	1	July	12	161	90	$50
Children's Memorial Hospital	Chicago	NPAssn	264	58	41	1	4,165	Yes	16	Jan. & July	12	97	52	$50
Cook County Hospital	Chicago	County	3,522	100	..	..	.....	No	6	Jan. & July	72	1,300	18	None
Michael Reese Hospital	Chicago	NPAssn	629	53	28	19	5,109	Yes	1	Jan. & July	12	230	47	$100
Presbyterian Hospital	Chicago	Church	462	24	48	28	387	Yes	1	Varies	12	178	58	None
Provident Hospital (col.)	Chicago	NPAssn	155	56	8	36	909	Yes	1	July	12	51	34	$50
Research and Educational Hospitals	Chicago	State	382	100	..	..	161	Yes	1	July	12	197	91	$50
University of Chicago Clinics	Chicago	NPAssn	262	25	70	5	.....	Yes	4	Varies	12	175	70	Varies
Indiana University Hospitals	Indianapolis	State	480	..	..	17	1,830	Yes	2	Jan.	12	145	48	$33.33
University Hospitals	Iowa City	State	954	84	8	8	.....	Yes	3	Jan.	12	267	50	Up to $70.83
Bell Memorial Hospital	Kansas City, Kan.	State	250	45	44	11	708	No	1	Dec.	12 [7]	193	78	$45
Louisville City Hospital	Louisville, Ky.	City	586	100	..	..	2,666	Yes	4	Feb.	36	332	32	$13.50 [10]
Charity Hospital	New Orleans	State	1,913	100	..	..	.....	Yes	2	July	24	1,384	58	$25
Touro Infirmary	New Orleans	NPAssn	366	30	38	32	340	Yes	1	Jan.	12	110	38	$25
Johns Hopkins Hospital	Baltimore	NPAssn	860	56	20	24	1,075	Yes	3	June	12 [7]	457	75	$20.83
Union Memorial Hospital	Baltimore	NPAssn	336	19	50	31	367	Yes	2	Jan.	12	91	38	$12.50
Boston City Hospital	Boston	City	1,762	85	14	1	5,066	No	1	Varies	Indef.	740	54	$83.33
Boston Floating Hospital	Boston	NPAssn	50	100	..	..	1,145	Yes	4	July, Sept., Oct.	12	27	84	$50
Children's Hospital [27]	Boston	NPAssn	283	2	59	39	1,081	Yes	2	Varies	12	71	44	$46.50
Long Island Hospital [12]	Boston	City	471	100	..	..	.....	No	1	June	12	77	42	$112.50
Massachusetts General Hospital	Boston	NPAssn	416	53	33	14	.....	Yes	1	Varies	12	....	59	$41.66
University Hospital	Ann Arbor, Mich.	State	1,285	75	..	25	.....	Yes	5	Jan.	12	376	52	$25

Numerical references will be found on page 720.

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		Control	Capacity	Classification of Patients Percentage: Free	Part Pay	Full Pay	Patients Treated Under Listed Specialty	Outpatient Service	Number of Residencies	Time of Appointment	Length of Service in Months	Number of Autopsies	Autopsy Percentage	Salary per Month
PEDIATRICS—(Continued)														
Children's Hospital	Detroit	NPAssn	239	..	..	..	6,449	Yes	6	Jan.	12	225	52	$25
Minneapolis General Hospital [1]	Minneapolis	City	681	80	15	5	2,571	Yes	2	Jan. & July	12	481	58	$25
Wheatley-Provident Hospital (col.)	Kansas City, Mo.	Corp	68	..	..	..	225	Yes	1	Varies	12	..	59	..
St. Louis Children's Hospital	St. Louis	NPAssn	203	61	35	14	3,493	Yes	9	July	12	103	64	$25
St. Louis City Hospital	St. Louis	City	806	100	..	..	2,103	Yes	2	March	12	764	42	$100
St. Mary's Group of Hospitals	St. Louis	Church	605	35	26	39	964	Yes	2	April	36	140	41	$25
Jersey City Hospital	Jersey City	City	900	94	..	6	815	Yes	1	Jan. & July	12	188	15	$50
Cumberland Hospital	Brooklyn	City	318	100	..	..	871	Yes	1	July	12	197	42	$100
Jewish Hospital	Brooklyn	NPAssn	674	33	38	29	614	Yes	1	Dec.	12	252	46	$50
Kings County Hospital	Brooklyn	City	3,240	67	..	33	2,171	Yes	2	Jan. & July	12	760	17	[4]
Long Island College Hospital	Brooklyn	NPAssn	480	17	34	49	404	Yes	3	Jan.	12	158	39	$50
Norwegian Lutheran Deaconesses' Home and Hospital	Brooklyn	Church	194	13	38	49	.....	Yes	1	March	12	78	31	None
Buffalo City Hospital [5]	Buffalo	Cy'Co	1,063	66	30	4	264	Yes	2	Feb.	..	352	55	$70
Children's Hospital	Buffalo	NPAssn	250	53	5	42	4,865	Yes	2	Jan.	12	121	59	$50
Babies Hospital	New York City	NPAssn	154	47	45	8	2,944	Yes	2	Varies	12	76	55	$100
Bellevue Hospital	New York City	City	2,418	100	..	..	2,039	Yes	10	July	12	985	27	$83.33
Fifth Avenue Hospital	New York City	NPAssn	340	22	22	56	1,287	Yes	1	Jan.	12	28	29	$50
Harlem Hospital	New York City	City	225	..	..	..	.....	No	1	Jan. & July	12	440	50	None
Metropolitan Hospital	New York City	City	1,020	100	..	..	1,295	Yes	2	July	12	281	25	0 $118
Mount Sinai Hospital	New York City	NPAssn	780	76	..	24	.....	Yes	2	Varies	12	389	46	$45
New York Foundling Hospital	New York City	Church	390	1	85	14	2,583	Yes	9	Jan. & July	12	29	59	$25
New York Hospital	New York City	NPAssn	1,150	11	63	25	769	Yes	6	Feb.	12	264	57	$25
N. Y. Post-Grad. Med. School and Hosp.	New York City	NPAssn	415	12	5	83	579	Yes	1	Dec.	24	81	26	$39.25
St. Luke's Hospital	New York City	Church	540	59	..	41	.....	Yes	2	Varies	12	183	49	$83.33
Strong Memorial and Rochester Municipal Hospitals	Rochester, N. Y.	NP-Cy	579	12	40	48	1,036	Yes	4	Jan.	12	372	67	$41.66
Sea View Hospital	Staten Island, N. Y.	City	1,446	..	..	..	250	.....	4	Jan. & July	12	255	44	$100
Grasslands Hospital	Valhalla, N. Y.	County	903	88	2	10	680	Yes	2	Jan. & July	12	327	72	Varies
Duke Hospital	Durham, N. C.	NPAssn	456	66	23	11	337	Yes	2	Jan.	36-48	182	61	$12.50
Children's Hospital	Akron, O.	NPAssn	110	..	..	..	2,488	.....	1	Jan.	12	61	43	$90
Children's Hospital	Cincinnati	Church	148	60	27	13	2,577	Yes	6	Dec.	12	73	23	$75
Cincinnati General Hospital	Cincinnati	City	925	81	13	6	2,586	Yes	7	Feb.	12-24	734	41	Up to $27.50
Good Samaritan Hospital	Cincinnati	Church	535	20	52	28	.....	Yes	1	Jan.	..	75	18	$50
Charity Hospital	Cleveland	Church	301	39	..	61	.....	Yes	1	Jan.	12	161	45	$50
University Hospitals [29]	Cleveland	NPAssn	539	40	9	51	786	Yes	7	Varies	12 [6]	373	63	$25
Children's Hospital	Columbus, O.	NPAssn	100	87	12	1	2,974	Yes	2	Jan.	12	54	55	$75
Univ. of Oregon Med. School Hosps. [18]	Portland, Ore.	County	395	100	..	..	2,327	Yes	2	Feb.	12	173	39	$30
Children's Hospital	Philadelphia	NPAssn	130	77	16	7	2,221	Yes	11	Quarterly	12	70	54	None
Children's Hospital of the Mary J. Drexel Home	Philadelphia	Church	53	30	23	47	1,111	Yes	1	April	12	9	36	$100
Hospital of the Univ. of Pennsylvania	Philadelphia	State	594	35	24	41	925	Yes	1	Jan. & Feb.	12	211	64	None
Philadelphia General Hospital	Philadelphia	City	2,560	100	..	..	.....	Yes	1	Jan.	12	1,926	48	$100
St. Christopher's Hosp. for Children	Philadelphia	NPAssn	75	54	15	31	2,157	Yes	4	Feb.	12	40	47	$75
Children's Hospital	Pittsburgh	NPAssn	196	55	12	33	2,219	Yes	4	Jan. & July	12	44	28	$85
Vanderbilt University Hospital	Nashville, Tenn.	NPAssn	110	31	37	32	870	No	3	July	12	164	63	$35.40
Medical College of Va., Hosp. Division	Richmond	NPAssn	456	9	80	11	871	Yes	1	Dec.	12	122	20	$50
University of Virginia	University	State	330	20	49	31	692	Yes	1	Dec.	12	134	40	$50
Children's Orthopedic Hospital	Seattle	NPAssn	135	57	16	1,371	Yes	1	Jan.	12	32	55	$87.85
State of Wisconsin General Hospital	Madison	State	652	86	7	7	.....	Yes	1	Jan.	12	254	71	$50
Milwaukee Children's Hospital	Milwaukee	NPAssn	155	13	19	68	2,923	Yes	4	Jan.	12	79	62	$30
PLASTIC SURGERY														
Kings County Hospital	Brooklyn	City	3,240	67	..	33	.....	Yes	1	Jan. & July	12	760	17	..[4]
PSYCHIATRY														
Compton Sanitarium	Compton, Calif.	Corp	155	..	..	100	295	No	1	Varies	Indef.	3	27	Varies
Stanford University Hospitals	San Francisco	NPAssn	223	8	43	49	479	Yes	2	Jan.	12	79	43	$25
Mendocino State Hospital	Talmage, Calif.	State	2,700	84	3	13	3,000	No	2	July	12	35	23	$50
Colorado Psychopathic Hospital [1]	Denver	State	78	..	93	7	785	Yes	6	March	36	17	81	$100
Neuro-Psychiatric Institute and Hospital of the Hartford Retreat [1]	Hartford, Conn.	NPAssn	200	..	..	..	657	No	2	Varies	Indef.	#	..	$100
Connecticut State Hospital	Middletown	State	3,024	..	..	..	3,970	Yes	3	Varies	Indef.	58	24	$175
New Haven Hospital	New Haven, Conn.	NPAssn	439	40	37	23	301	Yes	3	Jan. & July	12	188	48	$100
Delaware State Hospital	Farnhurst, Del.	State	978	84	7	9	.....	Yes	1	Jan. or June	12	39	44	$50
Gallinger Municipal Hospital	Washington, D. C.	City	754	99	1	..	3,292	No	2	Jan.	12	556	40	$30-50
St. Elizabeths Hospital	Washington, D. C.	Fed	5,275	..	..	..	5,790	.....	7	July & Oct.	12	200	73	$166.66
Cook County Psychopathic Hospital	Chicago	County	185	100	..	..	.....	No	2	Varies	12	24	20	$170
Research and Educational Hospital	Chicago	State	100	100	..	..	124	Yes	3	July	12	107	91	$50
East Moline State Hospital	East Moline, Ill.	State	1,931	100	..	..	2,474	Yes	2	Varies	Indef.	55	26	$135
Elgin State Hospital	Elgin, Ill.	State	3,900	100	..	..	5,966	Yes	2	Varies	12-24	113	28	$50
Central State Hospital	Indianapolis	State	1,729	100	..	..	1,761	No	4	Varies	Indef.	45	31	$157.50
Indianapolis City Hospital	Indianapolis	City	672	57	..	43	561	Yes	1	March	12	265	43	$83.81
Logansport State Hospital	Logansport, Ind.	State	1,682	97	1	2	1,837	No	2	Varies	36	34	22	$135
Iowa State Psychopathic Hospital	Iowa City	State	60	86	6	8	400	Yes	4	April & Nov.	12	3	100	$125
Osawatomie State Hospital	Osawatomie, Kan.	State	1,580	92	..	8	2,000	No	1	July	Indef.	41	19	$80
Menninger Sanitarium	Topeka, Kan.	Corp	45	..	..	100	95	Yes	2	.....	#	#	..	$75
Baltimore City Hosps. (Psychopathic)	Baltimore	City	320	100	..	..	684	No	2	Jan.	Indef.	27	66	$150
Johns Hopkins Hospital	Baltimore	NPAssn	860	56	20	24	320	Yes	5	June	12 [7]	457	75	$20.83
Spring Grove State Hospital	Catonsville, Md.	State	1,700	98	1	1	2,067	Yes	1	July	12	25	19	$146.66
Springfield State Hospital	Sykesville, Md.	State	2,600	99	..	1	2,690	No	1	May	12	40	26	$22.50
Sheppard and Enoch Pratt Hospital	Towson, Md.	NPAssn	300	6	68	26	671	No	3	Varies	Indef.	6	29	$150
McLean Hospital	Belmont, Mass.	NPAssn	232	7	42	51	375	Yes	5	June	12	#	..	$50
Boston Psychopathic Hospital	Boston	State	110	90	10	..	2,080	No	10	Varies	12-36	14	74	$75
Boston State Hospital	Boston	State	2,426	88	..	12	3,006	No	4	Varies	Indef.	167	49	$150
Massachusetts General Hospital	Boston	NPAssn	416	53	33	14	.....	Yes	2	Varies	12	..	59	$41.66
Gardner State Colony	Gardner, Mass.	State	1,342	97	2	1	1,672	Yes	1	Varies	12	20	31	Varies
Danvers State Hospital	Hathorne, Mass.	State	2,220	90	..	10	3,415	Yes	2	Varies	12	52	20	....
Medfield State Hospital	Medfield, Mass.	State	1,850	97	..	3	2,080	Yes	2	Varies	12	41	36	$150
Grafton State Hospital	North Grafton, Mass.	State	1,500	98	..	2	1,559	No	1	Varies	Indef.	24	39	$150
Taunton State Hospital	Taunton, Mass.	State	1,545	89	5	6	2,038	Yes	5	July	Indef.	117	56	$150
Worcester State Hospital	Worcester, Mass.	State	2,360	..	..	..	.....	Yes	6	July	12	165	61	None
State Psychopathic Hospital	Ann Arbor, Mich.	State	64	97	1	2	269	Yes	1	May	12	1	50	$150
Battle Creek Sanitarium	Battle Creek, Mich.	NPAssn	1,000	3	41	56	.....	No	1	March	12	7	29	$125 [11]
City of Detroit Receiving Hospital	Detroit	City	714	90	10	..	5,655	Yes	1	Jan.	12	624	33	$83.33
Kalamazoo State Hospital	Kalamazoo, Mich.	State	2,760	..	..	..	.....	Yes	1	July	Indef.	36	19	$50
Pontiac State Hospital	Pontiac, Mich.	State	1,766	..	..	..	1,753	....	1	Varies	Indef.	30	33	....
Traverse City State Hospital	Traverse City, Mich.	State	1,900	100	..	..	.....	No	3	Varies	Indef.	24	16	$141.66
Ypsilanti State Hospital	Ypsilanti, Mich.	State	1,485	86	2	12	2,015	Yes	2	Varies	Indef.	42	45	$141.66
Minneapolis General Hospital [1]	Minneapolis	City	681	80	15	5	941	Yes	1	Jan. & July	12	481	50	$25
State Hospital No. 1	Fulton, Mo.	State	1,763	97	..	3	1,777	No	3	Varies	Indef.	39	21	$150
State Hospital No. 2	St. Joseph, Mo.	State	2,430	98	..	2	2,429	No	1	Varies	Indef.	30	29	....
City Sanitarium	St. Louis	City	3,460	84	10	6	4,452	Yes	5	June	12	67	30	$150

Numerical references will be found on page 720.

		Control	Capacity	Classification of Patients — Percentage: Free	Part Pay	Full Pay	Patients Treated Limited to Specialty	Outpatient Service	Number of Residencies	Time of Appointment	Length of Service in Months	Number of Autopsies	Autopsy Percentage	Salary per Month
PSYCHIATRY—(Continued)														
St. Louis City Hospital	St. Louis	City	806	100	..	..	2,103	Yes	1	March	12	764	42	$100
Hastings State Hospital	Ingleside, Neb.	State	1,500	93	..	7	1,974	No	2	May & Dec.	Indef.	18	18	$125
Norfolk State Hospital	Norfolk, Neb.	State	1,044	89	11	..	1,035	No	1	Varies	Indef.	36	62	$90
New Jersey State Hospital	Greystone Park	State	4,520	22	71	7	6,105	Yes	8	Varies	Indef.	111	28	$163.33
Albany Hospital [19]	Albany, N. Y.	NPAssn	585	6	83	11	360	Yes	1	Feb.	12	257	60	$50
Binghamton State Hospital	Binghamton, N. Y.	State	2,974	94	6	..	3,564	Yes	4	Jan.	Indef.	131	54	....
Brooklyn State Hospital	Brooklyn	State	1,300	100	..	..	3,347	....	12	Varies	Indef.	134	27	$150
Buffalo City Hospital [5]	Buffalo	CyCo	1,063	66	30	4	1,378	Yes	2	Feb.	..	352	35	$50
Buffalo State Hospital	Buffalo	State	2,764	88	12	..	3,463	Yes	2	Varies	Indef.	48	21	$166.66
Hastings Hillside Hospital	Hastings-upon-Hudson, N. Y.	NPAssn	40	8	91	1	131	....	1	July	12	[2]	..	$100
Gowanda State Homeopathic Hospital	Helmuth, N. Y.	State	1,303	..	..	..	1,756	Yes	2	Varies	Indef.	68	67	....
Kings Park State Hospital	Kings Park, N. Y.	State	4,651	87	13	..	4,500	Yes	11	Varies	Indef.	72	28	$150
Middletown State Homeopathic Hosp.	Middletown, N. Y.	State	3,097	86	14	..	3,521	No	2	....	Indef.	71	50	....
New York Hospital	New York City	NPAssn	1,150	11	64	25	254	Yes	7	Feb.	12	264	57	$25
N. Y. State Psychiatric Inst. and Hosp.	New York City	State	200	100	..	..	594	Yes	6	Varies	12	2	67	$25
U. S. Marine Hospital [19]	New York City	USPHS	552	100	..	..	....	....	1	....	..	75	81	....
St. Lawrence State Hospital	Ogdensburg, N. Y.	State	2,317	91	2	7	2,652	Yes	2	Varies	12	72	38	$166.66
Hudson River State Hospital	Poughkeepsie, N. Y.	State	4,378	89	6	5	4,384	No	4	Varies	12	103	34	$166.66
Rochester State Hospital	Rochester, N. Y.	State	2,168	87	13	..	3,209	Yes	5	Varies	12	41	22	$150
Strong Memorial and Rochester Municipal Hospitals	Rochester, N. Y.	NP-Cy	579	12	40	48	....	Yes	1	Jan.	12	372	67	$41.66
Utica State Hospital	Utica, N. Y.	State	1,640	100	..	..	2,260	Yes	1	Varies	Indef.	37	25	....
Grasslands Hospital	Valhalla, N. Y.	County	903	88	2	10	1,176	Yes	1	Jan. & July	24	327	72	Varies
Bloomingdale Hospital	White Plains, N. Y.	NPAssn	300	5	44	51	499	Yes	6	Varies	24	2	50	$125
Duke Hospital	Durham, N. C.	NPAssn	456	66	23	11	....	Yes	1	Jan.	24-36	182	61	$12.50
North Dakota State Hosp. for Insane	Jamestown, N. D.	State	1,600	..	..	..	2,400	No	2	July	12	107	37	$75-100
Cincinnati General Hospital	Cincinnati	City	925	81	13	6	1,503	Yes	3	Feb.	12-36	734	41	Up to $27.50
Cincinnati Sanitarium	Cincinnati	Corp	100	..	..	100	155	No	1	Varies	Indef.	[2]	..	$125
City Hospital	Cleveland	City	1,600	100	..	..	673	Yes	2	Jan.	24	635	40	$87
Cleveland State Hospital	Cleveland	State	3,400	..	..	..	2,958	....	4	Varies	Indef.	29	25	....
Columbus State Hospital	Columbus, O.	State	2,856	100	..	..	3,989	No	1	Varies	Indef.	53	19	$141.66
Allentown State Hospital	Allentown, Pa.	State	1,510	82	5	13	2,334	Yes	2	Varies	Indef.	22	21	$150
Danville State Hospital	Danville, Pa.	State	1,947	85	6	9	2,459	Yes	1	Varies	Indef.	33	20	$100
Norristown State Hospital	Norristown, Pa.	State	3,499	95	..	5	3,427	....	5	June	Indef.	53	18	....
Friends Hospital	Philadelphia	NPAssn	190	2	25	73	212	No	1	Varies	12	[2]	..	$100
Pennsylvania Hospital Department for Mental and Nervous Diseases	Philadelphia	NPAssn	225	2	62	36	421	Yes	4	Jan.	Indef.	3	15	....
Philadelphia General Hospital	Philadelphia	City	2,560	100	..	..	....	Yes	2	Jan.	12	1,926	48	$100
St. Francis Hospital	Pittsburgh	Church	537	30	23	47	1,579	Yes	1	Nov.	12	134	36	$50
Warren State Hospital	Warren, Pa.	State	2,050	..	..	..	2,735	No	2	Varies	Indef.	54	32	$100
State Hospital for Mental Diseases	Howard, R. I.	State	2,301	94	3	3	2,263	Yes	1	Varies	12	72	42	$160
Butler Hospital [20]	Providence, R. I.	NPAssn	174	7	69	24	143	Yes	4	Jan. & July	12	2	25	$50
Charles V. Chapin Hospital	Providence, R. I.	City	265	76	10	14	652	Yes	1	Varies	12	55	37	....
Western State Hospital	Bolivar, Tenn.	State	1,800	95	..	5	2,550	No	6	Quarterly	12	30	24	$30
Galveston State Psychopathic Hosp.	Galveston, Tex.	State	55	..	..	..	....	....	1	Sept.	24	2	40	$137.50
University of Virginia Hospital	University	State	330	20	49	31	281	Yes	1	Dec.	12	134	40	$50
State of Wisconsin General Hospital [19]	Madison	State	652	86	7	7	....	Yes	1	Jan.	12	254	71	$50
Milwaukee Hosp. for Mental Diseases	Wauwatosa, Wis.	County	986	94	1	5	1,400	No	2	July	12	16	33	$50
Milwaukee Sanitarium	Wauwatosa, Wis.	Corp	130	3	5	92	350	No	1	Varies	36	[2]	..	$100
RADIOLOGY														
Los Angeles County Hospital	Los Angeles	County	3,410	100	..	..	....	Yes	2	Jan. & July	24	2,497	59	$10
San Francisco Hospital	San Francisco	CyCo	1,451	100	..	..	....	No	2	Feb. or March	12	571	41	$50
Stanford University Hospitals	San Francisco	NPAssn	323	8	43	49	....	Yes	1	Jan.	12	79	43	$25
University of California Hospital	San Francisco	State	281	68	..	32	....	Yes	2	Feb.	12	153	76	$25
New Haven Hospital	New Haven, Conn.	NPAssn	439	40	37	23	....	Yes	2	Jan. & July	12	188	48	$100
Garfield Memorial Hospital	Washington, D. C.	Corp	311	..	42	58	....	Yes	1	Dec.	12	70	30	$70
Michael Reese Hospital	Chicago	NPAssn	629	53	28	19	....	Yes	1	Jan. & July	12	230	47	$100
St. Luke's Hospital [1]	Chicago	Church	1,200	..	24	76	....	Yes	2	Jan.	12	124	40	None
University of Chicago Clinics	Chicago	NPAssn	262	25	70	5	....	Yes	3	Varies	12	175	70	Varies
University Hospitals	Iowa City	State	954	84	8	8	....	Yes	3	Jan.	12 [7]	267	50	Up to $70.83
Charity Hospital	New Orleans	State	1,913	100	..	..	....	Yes	1	July	24	1,384	58	$25
Touro Infirmary	New Orleans	NPAssn	366	30	38	32	....	Yes	1	Jan.	12	110	38	$25
Johns Hopkins Hospital	Baltimore	NPAssn	860	56	20	24	....	Yes	1	June	12 [7]	457	75	$20.83
University Hospital	Baltimore	State	450	54	26	20	....	Yes	1	Dec.	12	121	37	$25
Boston City Hospital	Boston	City	1,762	85	14	1	....	No	1	Varies	Indef.	740	24	$83.33
Massachusetts General Hospital	Boston	NPAssn	416	53	33	14	....	Yes	2	Varies	12	....	59	$41.66
Massachusetts Memorial Hospitals	Boston	NPAssn	267	24	34	42	....	Yes	2	March	12	83	41	$92.50
Peter Bent Brigham Hospital	Boston	NPAssn	246	28	33	39	....	Yes	2	Varies	12	220	75	$41.66
University Hospital	Ann Arbor, Mich.	State	1,285	75	..	25	....	Yes	3	Jan.	12	376	52	$25
City of Detroit Receiving Hospital	Detroit	City	714	90	10	..	....	Yes	1	Jan.	12	624	33	$83.33
Hurley Hospital	Flint, Mich.	City	425	..	..	..	....	No	1	May	12	164	27	$50
St. Louis City Hospital	St. Louis	City	806	100	..	..	....	Yes	1	March	12	764	42	$100
University of Nebraska Hospital	Omaha	State	197	100	..	..	....	No	1	July	12	108	78	$50
Kings County Hospital	Brooklyn	City	3,240	67	..	33	....	Yes	2	Jan. & July	12	760	17	..[4]
Long Island College Hospital	Brooklyn	NPAssn	480	17	34	49	....	Yes	1	Jan.	12	158	39	$50
Buffalo City Hospital [5]	Buffalo	CyCo	1,063	66	30	4	....	Yes	2	Feb.	..	352	35	$50
Bellevue Hospital [21]	New York City	City	2,418	100	..	..	....	Yes	6	July	12	985	27	0-$83.33
Lenox Hill Hospital	New York City	NPAssn	600	45	..	55	....	Yes	1	Varies	12	139	42	None
Montefiore Hosp. for Chronic Dis. [22]	New York City	NPAssn	711	95	..	5	....	Yes	2	Jan. & July	12	354	68	$25-50
Mount Sinai Hospital	New York City	NPAssn	780	76	..	24	....	Yes	3	Varies	12	389	46	$45
New York Hospital	New York City	NPAssn	1,150	11	64	25	....	Yes	2	Feb.	12	264	57	$25
N.Y. Post-Grad. Med. School and Hosp.	New York City	NPAssn	415	12	5	83	....	Yes	1	Dec.	12	81	26	$50-25
Presbyterian Hospital	New York City	NPAssn	648	37	34	29	....	Yes	2	Jan. & July	..	217	41	....
St. Luke's Hospital	New York City	Church	540	59	..	41	....	No	1	Varies	12	183	49	$83.33
Strong Memorial and Rochester Municipal Hospitals	Rochester, N. Y.	NP-Cy	579	12	40	48	....	Yes	2	Jan.	12	372	67	$41.66
Sea View Hospital	Staten Island, N. Y.	City	1,446	..	..	..	....	....	1	Jan. & July	12	255	44	$100
Duke Hospital	Durham, N. C.	NPAssn	456	66	23	11	....	Yes	1	Jan.	12	182	61	$12.50
Cincinnati General Hospital	Cincinnati	City	925	81	13	6	....	Yes	1	Feb.	12-36	734	41	Up to $27.50
City Hospital	Cleveland	City	1,600	100	..	..	....	Yes	1	Jan.	12	635	40	$87
University Hospitals	Cleveland	NPAssn	539	40	9	51	....	Yes	1	Varies	12 [8]	373	63	$25
Univ. of Oregon Med. School Hosps. [18]	Portland	County	395	100	..	..	....	Yes	1	Feb.	12	173	39	$30
Hospital of the Univ. of Pennsylvania	Philadelphia	State	594	35	24	41	....	Yes	1	Jan. & Feb.	12	211	64	None
Pennsylvania Hospital	Philadelphia	NPAssn	560	42	33	25	....	Yes	1	Varies	12	183	45	$25-60
Philadelphia General Hospital	Philadelphia	City	2,560	100	..	..	....	Yes	1	Jan.	12	1,926	48	$100
St. Francis Hospital	Pittsburgh	Church	537	30	23	47	....	Yes	1	Nov.	12	134	36	$50
John Sealy Hospital	Galveston, Tex.	City	374	73	4	23	....	Yes	1	Dec.	24	168	52	None
Medical College of Va., Hosp. Division	Richmond	NPAssn	456	9	80	11	....	Yes	1	Dec.	12	122	20	$50
University of Virginia Hospital	University	State	330	20	49	31	....	Yes	2	Dec.	24	134	40	$50
State of Wisconsin General Hospital	Madison	State	652	86	7	7	....	Yes	1	Jan.	12	254	71	$50

Numerical references will be found on page 720.

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	Control	Capacity	Classification of Patients: Percentage: Free	Part Pay	Full Pay	Patients Treated Under Listed Specialty	Outpatient Service	Number of Residencies	Time of Appointment	Length of Service in Months	Number of Autopsies	Autopsy Percentage	Salary per Month
SURGERY													
Hillman Hospital	Birmingham, Ala.	County	479	100	..	..	2,202	Yes	2	Jan.	12	269	28	$36
Employes' Hospital of the Tennessee Coal, Iron and Railroad Co.	Fairfield, Ala.	Corp	310	..	..	100	871	Yes	1	Jan.	12	119	47	$100
Fresno County General Hospital	Fresno, Calif.	County	528	98	2	..	4,244	Yes	2	Jan.	24	261	43	$60
Cedars of Lebanon Hospital	Los Angeles	NPAssn	288	20	3	77	1,826	Yes	1	Dec.	12	118	42	$100
Los Angeles County Hospital	Los Angeles	County	3,410	100	..	..	.....	Yes	6	Jan. & July	36	2,497	59	$10
White Memorial Hospital	Los Angeles	Church	134	1	68	31	1,606	Yes	1	July	36	42	33	$60
San Bernardino County Charity Hosp.	San Bernardino, Calif.	County	328	100	..	..	2,235	No	1	Jan.	12	137	44	$75
Hospital for Children	San Francisco	NPAssn	259	12	20	68	808	Yes	1	Jan.	12	29	31	$25
Mount Zion Hospital	San Francisco	NPAssn	189	19	14	67	1,765	No	1	Feb.	12	78	47	$50
San Francisco Hospital [33]	San Francisco	CyCo	1,451	100	..	..	2,347	No	5	Feb. or March	12	571	41	$50
Stanford University Hospitals	San Francisco	NPAssn	323	8	43	49	1,241	Yes	3	Jan.	12	79	43	$25
University of California Hospital	San Francisco	State	281	68	..	32	1,387	Yes	7	Feb.	12	133	76	$25
Santa Clara County Hospital	San Jose, Calif.	County	497	98	2	..	.....	Yes	1	Jan.	12	216	50	$100
Colorado General Hospital	Denver	State	178	75	25	..	729	No	1	Dec.	12	162	79	$80
New Haven Hospital	New Haven, Conn.	NPAssn	439	40	37	23	2,219	Yes	8	Jan. & July	12	188	48	$100
Central Disp. and Emergency Hosp.	Washington, D. C.	NPAssn	270	29	14	57	.....	No	4	Jan. or Feb.	12	55	31	$50
Freedmen's Hospital (col.)	Washington, D. C.	Fed	374	87	..	13	1,016	Yes	1	.....	12	104	31	....
Gallinger Municipal Hospital	Washington, D. C.	City	754	99	1	..	820	No	4	Jan.	12	556	40	$30-50
Garfield Memorial Hospital	Washington, D. C.	Corp	311	..	42	58	.....	Yes	2	Dec.	12	70	30	$70
Grady Hosp., Emory Univ. Div. (col.)	Atlanta, Ga.	City	263	100	..	..	1,709	Yes	3	Jan.	24	157	22	$50
University Hospital	Augusta, Ga.	City	270	51	5	44	2,851	Yes	3	July	12	161	30	$50
Augustana Hospital	Chicago	Church	375	9	34	57	.....	No	1	Oct.	12	54	33	None
Passavant Memorial Hospital	Chicago	NPAssn	348	5	2	93	.....	No	2	Jan. & July	12	54	16	None
Presbyterian Hospital	Chicago	Church	462	24	48	28	3,222	Yes	2	Varies	24	178	58	None
Provident Hospital (col.)	Chicago	NPAssn	155	56	8	36	2,333	Yes	1	July	12	51	34	$50
Research and Educational Hospital	Chicago	State	382	100	..	..	2,627	Yes	3	July	12 †	197	91	$50
St. Luke's Hospital [34]	Chicago	Church	659	4	20	76	4,229	Yes	7	Jan.	12	124	40	None
University of Chicago Clinics	Chicago	NPAssn	262	25	70	5	.....	Yes	5	Varies	12	175	70	Varies
Indianapolis City Hospital	Indianapolis	City	572	97	2	1	2,733	Yes	3	March	12	385	43	$20.81
Indiana University Hospitals	Indianapolis	State	480	83	..	17	1,337	Yes	2	Jan.	12	145	48	$33.33
University Hospitals	Iowa City	State	954	84	8	8	.....	Yes	10	Jan.	12 †	267	40	Up to $70.83
Bell Memorial Hospital	Kansas City, Kan.	State	250	45	44	11	1,043	No	3	Dec.	12 †	193	78	$45
Louisville City Hospital	Louisville, Ky.	City	586	100	..	..	5,137	Yes	11	Feb.	36	332	32	$13.50 [19]
Charity Hospital	New Orleans	State	1,913	100	..	..	30,326	Yes	5	July	48	1,384	58	$25
Touro Infirmary	New Orleans	NPAssn	366	20	38	32	2,330	Yes	1	Jan.	12	110	38	$25
Baltimore City Hospitals (General)	Baltimore	City	760	100	..	..	2,739	Yes	4	Jan.	12	357	33	$50
Bon Secours Hospital	Baltimore	Church	135	35	15	50	995	Yes	2	Jan.	12	36	66	$75
Church Home and Infirmary	Baltimore	Church	184	23	59	18	2,134	Yes	3	Dec.	12	43	42	$20
Johns Hopkins Hospital	Baltimore	NPAssn	860	56	20	24	3,368	Yes	7	June	12 †	457	75	$20-83
Maryland General Hospital	Baltimore	Church	229	4	6	31	.....	No	2	Jan.	12	33	16	$25
Mercy Hospital	Baltimore	Church	290	44	20	36	1,631	Yes	4	Jan.	12	63	27	$50
Provident Hosp. and Free Disp. (col.)	Baltimore	NPAssn	129	85	5	10	.....	No	1	Dec.	12	21	17	$25
St. Agnes' Hospital	Baltimore	Church	223	40	29	31	1,983	Yes	3	Dec.	12	57	26	None
St. Joseph's Hospital	Baltimore	Church	250	47	11	42	2,989	No	2	Dec.	12	66	40	None
Sinai Hospital	Baltimore	NPAssn	269	40	8	52	2,472	No	1	Jan.	12	70	28	$47.50
South Baltimore General Hospital	Baltimore	NPAssn	115	35	38	27	1,967	Yes	1	Dec.	12	20	16	$25
Union Memorial Hospital	Baltimore	NPAssn	336	19	50	31	3,544	Yes	6	Jan.	12	91	38	$12.50
University Hospital	Baltimore	State	450	54	26	20	1,894	Yes	5	Dec.	12	121	37	$25
West Baltimore General Hospital	Baltimore	NPAssn	200	94	..	66	1,833	Yes	3	Jan.	12	15	19	$20
Beth Israel Hospital	Boston	NPAssn	215	..	..	..	2,214	No	2	Varies	12	129	53	....
Boston City Hospital	Boston	City	1,762	85	14	1	13,283	No	10	Varies	12	740	24	$83.33
Children's Hospital	Boston	NPAssn	283	2	59	39	1,496	Yes	1	Varies	12	71	44	$56.50
Long Island Hospital	Boston	City	471	100	..	..	210	No	1	June	12	77	42	$112.50
Massachusetts General Hospital	Boston	NPAssn	416	53	33	14	.....	Yes	4	Varies	12	..	59	$41.66
Massachusetts Memorial Hospitals	Boston	NPAssn	367	4	42	54	2,241	Yes	2	March	12	83	41	$50-56
Peter Bent Brigham Hospital	Boston	NPAssn	246	28	33	39	2,564	Yes	5	Varies	16	220	75	$41.66
Truesdale Hospital	Fall River, Mass.	NPAssn	125	16	46	38	2,434	Yes	2	Jan. & June	12	54	47	None
Memorial Hospital	Worcester, Mass.	NPAssn	215	15	8	77	1,766	Yes	1	March or April	12	64	40	$60
University Hospital	Ann Arbor, Mich.	State	1,285	75	..	25	.....	Yes	12	Jan.	12	376	52	$25
Battle Creek Sanitarium	Battle Creek, Mich.	NPAssn	1,000	3	41	56	.....	No	1	March	12	7	29	$125 [35]
City of Detroit Receiving Hospital	Detroit	City	714	90	10	..	4,462	Yes	2	Jan.	12	624	33	$83.33
Grace Hospital	Detroit	NPAssn	443	32	44	24	.....	Yes	1	July & Sept.	12	125	25	$37.50
Harper Hospital [33]	Detroit	NPAssn	750	13	..	87	6,876	No	4	Feb.	18	105	22	$20-30
Henry Ford Hospital	Detroit	NPAssn	610	46	54	..	.....	Yes	4	March	12	151	44	$110
Jefferson Clinic and Diagnostic Hosp.	Detroit	NPAssn	63	5	15	80	.....	Yes	1	Feb.	24	8	20	$50
Providence Hospital	Detroit	Church	385	26	62	12	4,529	No	1	Jan.	12	104	26	$100
Dr. William J. Seymour Hospital	Eloise, Mich.	County	1,368	100	..	..	2,455	Yes	4	March	24	387	33	$37.50
Minneapolis General Hospital [1]	Minneapolis	City	681	80	15	5	2,320	Yes	7	Jan. & July	36	481	50	$25
Ancker Hospital	St. Paul	CyCo	1,050	100	..	..	.....	Yes	2	March	12	590	56	$50
St. Louis County Hospital	Clayton, Mo.	County	225	93	..	7	917	No	1	Dec.	12	64	19	$100
Barnard Free Skin and Cancer Hosp.	St. Louis	NPAssn	44	100	..	..	.....	Yes	1	Dec.	12	19	68	$25
Barnes Hospital	St. Louis	Church	270	25	9	66	.....	Yes	7	Dec.	12	168	54	$28.35
Jewish Hospital	St. Louis	NPAssn	290	28	54	18	.....	Yes	2	Nov.	12	64	33	$40
St. Louis City Hospital	St. Louis	City	806	100	..	..	4,344	Yes	4	March	12	764	42	$100
St. Louis City Hospital No. 2 (col.)	St. Louis	City	340	100	..	..	2,254	No	2	June	36	361	41	$100
St. Luke's Hospital	St. Louis	Church	210	15	25	60	2,486	Yes	2	Dec.	12	41	30	$50
St. Mary's Group of Hospitals	St. Louis	Church	605	35	26	39	2,137	Yes	5	April	36	140	41	$25
Jersey City Hospital	Jersey City	City	900	94	..	6	4,142	Yes	3	Jan. & July	36	188	15	$50
Burlington County Hospital	Mount Holly, N. J.	NPAssn	135	38	29	33	1,384	Yes	1	April	12	72	50	$100
Albany Hospital	Albany, N. Y.	NPAssn	585	6	83	11	2,940	Yes	3	Feb.	12	257	60	$50
Cumberland Hospital	Brooklyn	City	318	100	..	..	1,917	Yes	2	July	12	197	42	$100
Kings County Hospital	Brooklyn	City	3,240	67	..	33	12,625	Yes	4	Jan. & July	12	760	17	*
Long Island College Hospital	Brooklyn	NPAssn	480	17	34	49	2,017	Yes	3	Jan.	12	158	39	$50
Norwegian Lutheran Deaconesses' Home and Hospital	Brooklyn	Church	194	13	38	49	.....	Yes	1	March	12	78	31	None
Buffalo City Hospital [2]	Buffalo	CyCo	1,063	66	30	4	2,233	Yes	2	Feb.	..	352	35	$50
Buffalo General Hospital	Buffalo	NPAssn	467	13	34	53	2,889	Yes	5	July	24	170	35	$25
Millard Fillmore Hospital	Buffalo	NPAssn	309	24	32	44	2,823	Yes	2	Dec.	12	115	39	$50
Clifton Springs Sanitarium and Clinic	Clifton Springs, N. Y.	NPAssn	482	10	30	60	.....	No	1	Varies	12	25	50	$50
Charles S. Wilson Memorial Hospital	Johnson City, N. Y.	NPAssn	220	1	5	94	1,541	Yes	1	Dec.	12	98	60	$50
Bellevue Hospital	New York City	City	2,418	100	..	..	12,973	Yes	3	July	12	985	27	$83.33
Fifth Avenue Hospital	New York City	NPAssn	340	22	22	56	2,574	Yes	2	Jan.	12	28	29	$50
Metropolitan Hospital	New York City	City	1,620	100	..	..	2,613	Yes	2	July	24	281	25	$118
Montefiore Hosp. for Chronic Diseases	New York City	NPAssn	711	95	..	5	.....	Yes	2	Jan. or July	12	354	69	$50-100
Mount Sinai Hospital	New York City	NPAssn	780	76	..	24	.....	Yes	6	Varies	12	289	46	$45
New York Hospital	New York City	NPAssn	1,150	11	64	25	3,855	Yes	16	Feb.	12	264	57	$25
N. Y. Polyclinic Med. School and Hosp.	New York City	NPAssn	346	70	..	30	1,989	Yes	8	Varies	24	74	34	None
N. Y. Post-Grad. Med. School and Hosp.	New York City	NPAssn	415	12	5	83	2,758	Yes	1	Dec.	12	81	26	$80.25
New York Society for the Relief of the Ruptured and Crippled	New York City	NPAssn	269	13	14	73	1,595	Yes	3	Jan. & July	12	7	39	$20

Numerical references will be found on page 720.

	Control	Capacity	Classification of Patients — Percentage: Free	Part Pay	Full Pay	Patients Treated Limited Specialty	Outpatient Service	Number of Residencies	Time of Appointment	Length of Service in Months	Number of Autopsies	Autopsy Percentage	Salary per Month
SURGERY—(Continued)													
Presbyterian Hospital [1]	New York City	NPAssn	648	37	34	29	3,119	Yes	9	Jan. & July	..	217	41	...
Rochester General Hospital	Rochester, N. Y.	NPAssn	361	27	12	61	.....	Yes	1	April	12	173	67	$25
Strong Memorial and Rochester Municipal Hospitals	Rochester, N. Y.	NP-Cy	579	12	40	48	4,522	Yes	4	Jan.	12	372	67	$41.66
Hospital of the Good Shepherd	Syracuse, N. Y.	NPAssn	242	3	46	51	.....	No	2	Dec.	12	89	38	$37.50
Grasslands Hospital	Valhalla, N. Y.	County	903	88	2	10	1,506	Yes	2	Jan. & July	12	327	72	Varies
Duke Hospital	Durham, N. C.	NPAssn	456	66	23	11	1,433	Yes	4	Jan.	36-48	182	61	$12.50
Watts Hospital	Durham, N. C.	NPAssn	225	29	32	39	1,860	Yes	2	Jan. or Feb.	12	34	22	$50
City Hospital	Akron, O.	City	350	41	8	51	4,332	Yes	3	Feb.	36	246	60	$50
St. Thomas Hospital	Akron, O.	Church	183	22	39	39	1,928	No	1	Dec. or Jan.	12	70	36	...
Cincinnati General Hospital	Cincinnati	City	925	81	13	6	4,500	Yes	13	Feb.	12-60	734	41	Up to $27.50
Deaconess Hospital	Cincinnati	Church	175	6	44	50	1,976	Yes	1	Dec.	12	68	35	$75
Good Samaritan Hospital	Cincinnati	Church	535	20	52	28	5,382	Yes	3	Jan.	12	75	18	$50
Jewish Hospital	Cincinnati	NPAssn	262	20	44	36	2,181	Yes	1	Dec.	12	50	27	$75
Charity Hospital	Cleveland	Church	301	39	..	61	.....	Yes	1	Jan.	12	161	45	$50
City Hospital	Cleveland	City	1,690	100	..	..	3,340	Yes	6	Jan.	24	635	40	$37
Mount Sinai Hospital	Cleveland	NPAssn	270	34	58	8	3,003	Yes	2	Dec.	12	79	37	$50
St. Alexis Hospital	Cleveland	Church	220	30	4	66	2,095	No	3	Dec.	12	56	23	$50
St. John's Hospital	Cleveland	Church	207	13	8	79	2,002	No	1	Dec.	12	54	28	$50
St. Luke's Hospital	Cleveland	Church	392	23	4	73	2,752	Yes	4	Dec.	12 [7]	80	24	$25
University Hospitals	Cleveland	NPAssn	539	40	9	51	3,252	Yes	7	Varies	12 [8]	373	63	$25
Starling-Loving University Hospital	Columbus, O.	State	276	50	18	32	.....	Yes	4	Dec.	12	141	47	$25
Miami Valley Hospital	Dayton, O.	NPAssn	343	..	..	..	.....	No	1	Jan.	12	246	58	$100
St. Anthony Hospital	Oklahoma City	Church	290	13	51	36	2,833	Yes	1	Jan.	12	70	33	$50
State University Hospitals	Oklahoma City	State	522	34	39	9	2,202	Yes	3	Dec.	12	147	39	$25
Univ. of Oregon Med. School Hosps. [15]	Portland	County	395	100	..	..	774	Yes	2	Feb.	24	173	39	$30
Geo. F. Geisinger Memorial Hospital	Danville, Pa.	NPAssn	198	17	29	54	1,954	Yes	1	Jan.	12	66	33	$90
Graduate Hospital of the Univ. of Pa.	Philadelphia	NPAssn	475	39	9	52	1,234	Yes	2	Jan. to April	12	101	44	None
Jewish Hospital	Philadelphia	NPAssn	426	34	11	55	3,127	No	1	Feb.	12	137	45	None
Pennsylvania Hospital	Philadelphia	NPAssn	560	42	33	25	1,017	Yes	2	Varies	12	183	45	$25-90
Philadelphia General Hospital	Philadelphia	City	2,560	100	..	..	.....	Yes	1	Jan.	12	1,926	48	$100
Allegheny General Hospital	Pittsburgh	NPAssn	405	67	2	31	3,694	No	1	Jan.	12	84	25	$81
St. Francis Hospital	Pittsburgh	Church	537	30	23	47	879	Yes	2	Nov.	12	134	36	$50
Reading Hospital	Reading, Pa.	Corp	298	3	3	45	4,482	Yes	1	Jan.	12	142	41	$83.33
Roper Hospital	Charleston, S. C.	NPAssn	325	66	6	28	3,043	No	1	Jan.	12	243	42	$40
Baroness Erlanger Hospital	Chattanooga, Tenn.	CyCo	246	68	2	30	.....	No	1	Dec.	12	68	18	$70
Memphis General Hospital	Memphis, Tenn.	City	400	90	10	..	4,896	Yes	3	July	12	258	18	$25
Nashville General Hospital	Nashville, Tenn.	City	305	85	..	15	3,656	Yes	2	Dec.	12	163	35	$35
Vanderbilt University Hospital	Nashville, Tenn.	NPAssn	110	31	37	32	1,782	No	3	July	12	164	63	$37.40
Baylor University Hospital	Dallas, Tex.	Church	344	11	11	78	5,596	Yes	1	April	12	109	36	$100
John Sealy Hospital	Galveston, Tex.	City	374	73	4	23	1,276	Yes	1	Dec.	12	168	52	None
Dr. W. H. Groves Latter-Day Saints Hospital	Salt Lake City	Church	466	10	..	90	2,915	Yes	1	March	12	39	16	$35 [34]
Norfolk Protestant Hospital	Norfolk, Va.	Church	200	25	30	45	.....	Yes	1	Jan.	12	51	32	$35
Medical College of Va., Hosp. Division	Richmond	NPAssn	456	9	80	11	3,511	Yes	7	Dec.	12	122	20	$50
University of Virginia Hospital	University	State	350	20	49	31	1,386	Yes	3	Dec.	60	134	40	$50
Charleston General Hospital	Charleston, W. Va.	Corp	165	..	20	80	1,466	Yes	2	Sept.	12	62	30	$25
State of Wisconsin General Hospital	Madison	State	652	86	7	7	.....	Yes	4	Jan.	12	254	71	$50
THORACIC SURGERY														
Norwich State Tuberculosis Sanatorium (Uncas-on-Thames)	Norwich, Conn.	State	404	..	..	..	275	Yes	1	Jan.	12	22	23	$144
Sea View Hospital	Staten Island, N. Y.	City	1,446	..	..	..	276	....	3	Jan. & July	12	255	44	$100
City Hospital	Cleveland	City	1,690	100	..	..	.....	Yes	1	Jan.	24	635	40	$37
TROPICAL DISEASES														
Boston City Hospital	Boston	City	1,762	85	14	1	.....	No	1	Varies	Indef.	740	24	$83.33
University Hospital of the School of Tropical Medicine	San Juan, P. R.	Gov't	50	74	14	12	544	Yes	2	May	Indef.	31	60	$150
TUBERCULOSIS														
Arroyo Sanatorium	Livermore, Calif.	County	180	100	..	..	240	Yes	1	Jan.	12	5	50	$125
Barlow Sanatorium	Los Angeles	NPAssn	100	14	86	..	172	Yes	2	Varies	12	[3]	..	$100
Los Angeles County Hospital	Los Angeles	County	100	..	..	..	.....	Yes	1	Jan. & July	12	2,497	59	$10
Pottenger Sanatorium and Clinic	Monrovia, Calif.	Corp	120	..	18	82	457	Yes	3	Varies	Indef.	5	38	$50
Santa Clara County Hospital	San Jose, Calif.	County	497	98	2	..	.....	Yes	2	Jan.	12	216	50	$100
Union Printers' Home and Tuberculosis Sanatorium	Colorado Springs	NPAssn	176	..	..	..	527	No	1	Varies	Indef.	10	19	...
National Jewish Hospital	Denver	NPAssn	252	100	..	..	460	Yes	3	Varies	36	14	48	$100
Sanatorium of the Jewish Consumptives' Relief Society	Spivak, Colo.	NPAssn	301	100	..	..	318	Yes	5	Varies	Indef.	12	50	$100
Undercliff, Meriden State Tuberculosis Sanatorium	Meriden, Conn.	State	252	80	20	..	422	Yes	3	Varies	Indef.	3	25	$100
New Haven Hospital	New Haven, Conn.	NPAssn	439	40	37	23	.....	Yes	1	Jan. & July	12	188	48	$100
Norwich State Tuberculosis Sanatorium (Uncas-on-Thames)	Norwich, Conn.	State	404	..	..	..	738	Yes	2	Varies	12	22	23	$144
City of Chicago Municipal Tuberculosis Sanitarium	Chicago	City	1,206	100	..	..	3,160	No	2	Varies	Indef.	108	41	$175
Macon County Tuberculosis Sanat.	Decatur, Ill.	County	80	90	..	10	109	Yes	1	July	12	[2]	..	$100
Rockford Municipal Tuberculosis Sanatorium	Rockford, Ill.	CyCo	110	100	..	..	158	No	1	Varies	12	[3]	..	$100
Boehne Tuberculosis Hospital	Evansville, Ind.	County	115	28	62	10	573	Yes	1	Varies	12-36	16	89	$150
Indiana State Sanatorium	Rockville, Ind.	State	211	98	..	2	405	Yes	1	Varies	Indef.	[3]	..	$50
Western Maine Sanatorium	Greenwood Mountain	State	150	..	..	..	293	Yes	2	Varies	12	15	63	$75
Baltimore City Hosp. (Tuberculosis)	Baltimore	City	179	100	..	..	646	No	2	Jan.	24	114	58	$58.33
Maryland Tuberculosis Sanatorium	State Sanatorium	State	510	86	..	14	769	....	1	July	Indef.	16	17	$133.33
Rutland State Sanatorium	Rutland, Mass.	State	370	100	..	..	755	Yes	1	Varies	Indef.	34	53	$150
Plymouth County Hospital	South Hanson, Mass.	County	136	..	..	..	293	Yes	1	.....	12	12	48	...
Middlesex County Sanatorium	Waltham, Mass.	County	252	..	..	..	426	Yes	2	Varies	Indef.	19	53	$150
Belmont Hospital	Worcester, Mass.	City	275	71	..	29	.....	Yes	1	Varies	12-36	19	35	$133.33
University Hospital	Ann Arbor, Mich.	State	1,285	75	..	25	.....	Yes	2	Jan.	12	376	52	$25
American Legion Hospital	Battle Creek, Mich.	State	375	100	..	..	361	No	2	Varies	12	14	78	$150
Herman Kiefer Hospital	Detroit	City	1,400	98	..	2	2,033	No	12	Varies	12	155	29	$125
Michigan State Sanatorium	Howell	State	491	99	..	1	670	Yes	2	Varies	Indef.	12	43	$125
Jackson County Sanatorium	Jackson, Mich.	County	64	95	4	1	107	Yes	1	Jan. or July	Indef.	3	33	$25
Morgan Heights Sanatorium	Marquette, Mich.	County	90	99	..	1	185	Yes	1	July	12	[9]	..	$125
Wm. H. Maybury Sanatorium	Northville, Mich.	City	835	100	..	..	1,476	.....	5	July	12	8	17	$150
Nopeming Sanatorium	Nopeming, Minn.	County	230	97	2	1	416	Yes	1	Jan. or July	12	13	62	$75
Glen Lake Sanatorium [37]	Oak Terrace, Minn.	County	709	93	5	2	1,173	No	1	.....	12	56	50	$10
City Isolation Hospital	St. Louis	City	250	92	3	5	201	No	1	April	12	96	32	$75
Mount St. Rose Sanatorium	St. Louis	Church	135	45	45	10	313	Yes	1	April	..	58	35	$25
Robert Koch Hospital	St. Louis	City	500	100	..	..	825	No	5	March	Indef.	39	42	$150

Numerical references will be found on page 720.

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			Classification of Patients Percentage									
		Control	Capacity	Free	Part Pay	Full Pay	Patients Treated Under Listed Specialty	Outpatient Service	Number of Residencies	Time of Appointment	Length of Service in Months	Number of Autopsies	Autopsy Percentage	Salary per Month
TUBERCULOSIS—(Continued)														
New Jersey Sanatorium	Glen Gardner	State	420	98	1	1	912	Yes	1	Varies	Indef.	1	17	$150
Jersey City Hospital	Jersey City	City	900	94	..	6	530	Yes	1	Jan. & July	12	188	15	$30
Hudson County Tuberculosis Hospital and Sanatorium	Secaucus, N. J.	County	207	..	..	..	1,280	Yes	3	June	12	17	24	....
Albany Hospital	Albany, N. Y.	NPAssn	585	6	83	11	152	Yes	2	Feb.	12	257	60	$30
Montefiore Hosp. Country Sanatorium	Bedford Hills, N. Y.	NPAssn	230	97	3	..	451	No	3	Jan.	12	[2]	..	$100
Kings County Hospital	Brooklyn	City	3,240	67	..	33	1,558	Yes	2	Jan. & July	12	760	17	...[4]
Loomis Sanatorium	Loomis, N. Y.	NPAssn	128	7	70	23	257	No	1	Varies	12	[2]	..	$125
Metropolitan Life Insurance Co. Sanat.	Mt. McGregor, N. Y.	Corp	360	100	..	..	508	....	3	Varies	Indef.	2	25	$100
Bellevue Hospital	New York City	City	2,418	100	..	..	2,398	Yes	11	July	12	985	27	$70-83.33
Lenox Hill Hospital	New York City	NPAssn	600	45	..	55	195	Yes	1	Varies	12	139	42	$35
Metropolitan Hospital	New York City	City	1,620	100	..	..	1,134	Yes	5	July	12	281	25	$70-100
Montefiore Hosp. for Chronic Diseases	New York City	NPAssn	711	95	..	5	.....	Yes	2	Jan. & July	12	334	69	$50-100
Municipal Sanatorium	Otisville, N. Y.	City	388	..	..	..	867	No	3	Jan. & July	12	[2]	..	$120
New York State Hospital	Ray Brook	State	300	100	..	..	296	Yes	2	Varies	Indef.	5	38	...
Iola-Monroe County Tuberculosis Sanatorium	Rochester, N. Y.	County	460	98	2	..	947	Yes	3	Varies	Indef.	32	52	$150
Sea View Hospital	Staten Island, N. Y.	City	1,446	..	..	..	3,732	....	16	Jan. & July	18	255	44	$100
Trudeau Sanatorium	Trudeau, N. Y.	NPAssn	181	9	10	81	450	No	2	Varies	12	1	20	$183.33
Grasslands Hospital	Valhalla, N. Y.	County	903	88	2	10	501	Yes	3	Jan. & July	12	327	72	Varies
North Carolina Sanatorium	Sanatorium	State	484	10	87	3	1,033	No	3	Varies	12	10	31	$120
City Hospital	Cleveland	City	1,050	100	..	..	512	Yes	1	Jan.	24	635	40	$87
Ohio State Sanatorium	Mt. Vernon	State	240	..	..	..	664	Yes	2	Varies	Indef.	[2]	..	$141.66
Sunny Acres, Cleveland Tuberculosis Sanatorium	Warrensville, O.	CyCo	461	99	..	1	804	Yes	3	Jan. & July	12	11	37	$112.50
Eagleville Sanat. for Consumptives	Eagleville, Pa.	NPAssn	188	51	14	35	379	No	2	Varies	Indef.	[2]	..	$125
Philadelphia General Hospital	Philadelphia	City	2,560	100	..	..	.....	Yes	1	Jan.	12	1,926	75	$100
White Haven Sanatorium	White Haven, Pa.	NPAssn	250	2	..	98	544	No	1	Varies	12	43	49	$90
Pine Breeze Sanatorium	Chattanooga, Tenn.	NPAssn	225	92	4	4	417	Yes	2	Jan. or July	12	7	15	$120-200
St. Joseph's Sanatorium	El Paso, Tex.	Church	75	11	60	29	129	No	1	June	12	7	78	$100
Hopemont Sanitarium	Hopemont, W. Va.	State	420	52	48	..	836	Yes	2	July	12	25	40	$50
Wisconsin State Sanatorium	Statesan	State	240	99	..	1	310	No	3	Varies	Indef.	5	17	$160-225
UROLOGY														
Hillman Hospital	Birmingham, Ala.	County	479	100	..	..	520	Yes	1	Jan.	12	269	28	$36
Los Angeles County Hospital	Los Angeles	County	3,410	100	..	..	.....	Yes	3	Jan. & July	24	2,497	59	$10
Stanford University Hospitals	San Francisco	NPAssn	323	8	43	49	400	Yes	1	Jan.	12	79	43	$25
New Haven Hospital	New Haven, Conn.	NPAssn	439	40	37	23	.....	Yes	1	Jan. & July	12	188	48	$100
Grady Hospital, Emory University Division (colored unit)	Atlanta, Ga.	City	263	100	..	..	194	Yes	1	Jan.	12	157	22	$50
University of Chicago Clinics	Chicago	NPAssn	262	25	70	5	.....	Yes	1	Varies	12	175	70	Varies
Indianapolis City Hospital	Indianapolis	City	572	97	2	1	284	Yes	1	March	12	385	43	$20.81
University Hospitals	Iowa City	State	954	81	8	8	.....	Yes	3	Jan.	12 [7]	267	50	Up to $70.83
Charity Hospital	New Orleans	State	1,913	100	..	..	2,833	Yes	2	July	24	1,384	58	$25
Touro Infirmary	New Orleans	NPAssn	366	30	38	32	.....	Yes	1	Jan.	12	110	38	$25
Johns Hopkins Hospital	Baltimore	NPAssn	860	56	20	24	606	Yes	3	June	12 [7]	457	75	$20.83
Beth Israel Hospital	Boston	NPAssn	215	..	..	..	275	No	1	Varies	12	129	53	...
Massachusetts General Hospital	Boston	NPAssn	416	33	13	14	.....	Yes	2	Varies	12	..	59	$41.66
Battle Creek Sanitarium	Battle Creek, Mich.	NPAssn	1,000	3	41	56	.....	No	1	March	12	7	29	$125 [11]
City of Detroit Receiving Hospital	Detroit	City	714	90	10	..	1,039	Yes	1	Jan.	12	624	33	$83.33
Dr. William J. Seymour Hospital	Eloise, Mich.	County	1,368	100	..	..	956	Yes	2	March	24	587	33	$37.50
Ancker Hospital	St. Paul	CyCo	1,050	100	..	..	.....	Yes	1	March	12	530	50	$30
St. Louis City Hospital	St. Louis	City	806	100	..	..	691	Yes	2	March	12	764	42	$100
Bayonne Hospital and Dispensary [38]	Bayonne, N. J.	NPAssn	200	80	2	18	277	....	1	Varies	12	74	33	None
Jersey City Hospital	Jersey City	City	930	94	..	6	1,180	Yes	1	Jan. & July	12	188	15	$30
Newark City Hospital	Newark, N. J.	City	760	100	..	..	547	Yes	1	July	12	294	27	None
Kings County Hospital	Brooklyn	City	3,240	67	..	33	1,289	Yes	2	Jan. & July	12	760	17	...[4]
Long Island College Hospital	Brooklyn	NPAssn	480	17	34	49	330	Yes	2	Jan.	12	158	39	$50
Bellevue Hospital	New York City	City	2,418	100	..	..	1,530	Yes	3	July	12	985	27	$83.33
Morrisania City Hospital	New York City	City	539	100	..	..	654	Yes	3	Jan. & July	18	350	34	None
New York Polyclinic [7]	New York City	NPAssn	1,150	11	64	25	464	Yes	2	Feb.	12	264	57	$25
N. Y. Post-Grad. Med. School and Hosp.	New York City	NPAssn	415	12	5	83	342	Yes	1	Dec.	12	81	26	None
Presbyterian Hospital	New York City	NPAssn	648	37	34	29	1,209	Yes	5	Jan. & July	..	217	41	...
Strong Memorial and Rochester Municipal Hospitals	Rochester, N. Y.	NP-Cy	579	12	40	48	.....	Yes	2	Jan.	12	372	67	$41.66
Sea View Hospital [39]	Staten Island, N. Y.	City	1,446	..	..	..	400	....	1	Jan. & July	12	255	44	$100
Duke Hospital	Durham, N. C.	NPAssn	456	66	23	11	466	Yes	2	Jan.	36-48	182	61	$12.50
City Hospital	Cleveland	City	1,050	100	..	..	.....	Yes	1	Jan.	12	635	40	$87
University Hospitals	Cleveland	NPAssn	539	40	9	51	700	Yes	1	Varies	12 [8]	373	68	$25
Starling-Loving University Hospital	Columbus, O.	State	276	50	18	32	.....	Yes	1	Dec.	12	141	47	$25
Graduate Hospital of the Univ. of Pa.	Philadelphia	NPAssn	475	39	9	52	209	Yes	1	Jan. to April	12	101	44	None
Hospital of the Univ. of Pennsylvania	Philadelphia	State	594	35	24	41	282	Yes	1	Jan. & Feb.	12	211	64	None
Pennsylvania Hospital	Philadelphia	NPAssn	350	33	23	44	316	Yes	1	Varies	12	183	45	$25-60
Presbyterian Hospital	Philadelphia	Church	425	42	11	47	121	Yes	1	Varies	12	107	41	...
Mercy Hospital [1]	Pittsburgh	Church	670	30	35	35	368	Yes	1	Nov.	12	126	27	...
University of Virginia Hospital	University	State	330	20	49	31	512	Yes	2	Dec.	24	134	40	$50
State of Wisconsin General Hospital	Madison	State	622	86	7	7	.....	Yes	2	Jan.	12	224	71	$50
Milwaukee County General Hospital	Wauwatosa, Wis.	County	1,125	100	..	..	400	Yes	1	May	12	344	29	$100

1. Fellowships.
2. Because of low death rate, autopsy figures not compiled.
3. Includes urology.
4. No salary first six months; $100 a month thereafter.
5. Residencies at Buffalo City Hospital are three year appointments including internship. Salary and bonus paid in lieu of maintenance.
6. Usually twelve months but may be extended.
7. Subject to reappointment.
8. Salary established by government pay tables.
9. Dental and medical degrees required.
10. $100 bonus.
11. In lieu of maintenance.
12. Includes obstetrics.
13. One appointment is a fellowship.
14. Includes pediatrics.
15. University of Oregon Medical School Hospitals include Multnomah County Hospital and Doernbecher Memorial Hospital for Children (state control).
16. Two appointments are fellowships; length of service indefinite.
17. Includes medicine, obstetrics and pediatrics.
18. Includes psychiatry.
19. Includes neurology.
20. Not a hospital; outpatients only.
21. Two years at Herman Kiefer Hospital, Detroit, in obstetrics.
22. Two years at City of Detroit Receiving Hospital in gynecology.
23. Affiliated with Barnes Hospital, St. Louis; gynecology.
24. No salary first eight months; $25 a month last four months.
25. Affiliated with Crippled Children's Hospital School and Hospital for Crippled Adults, Memphis.
26. Clinical material available through affiliation with Anthony N. Brady Maternity Hospital, Memorial Hospital, St. Peter's Hospital and St. Margaret's House and Hospital, Albany, and Hudson City Hospital, Hudson, N. Y.
27. Affiliated with Infants' Hospital and Boston Lying-in Hospital, Boston.
28. Includes neurosurgery.
29. Two appointments are fellowships.
30. Three months training in pediatric neurology at Emma Pendleton Bradley House, East Providence.
31. Three residents on roentgenology and three on radiation therapy.
32. Training in radiation therapy only.
33. Three appointments include four months on obstetrics.
34. Two of the residents spend six months on surgery and six months on urology.
35. Includes six months on pathology.
36. $60 bonus.
37. Three months on medical service at University Hospitals, Minneapolis.
38. First six months spent at New York Post Graduate Medical School, New York City.
39. Includes dermatology-syphilology.

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THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, AUGUST 31, 1935

PROGRESS IN MEDICINE DURING THE LAST TWENTY-FIVE YEARS

Three distinguished English physicians[1] have recently viewed in retrospect the major lines of advance in the fields of medicine, surgery, and obstetrics and gynecology, the occasion being the celebration of the jubilee of King George. There is in medicine, as in other lines of endeavor, a continuity of development that precludes the acceptance of any line of demarcation twenty-five years ago which is not based on previous accumulated experience.

In the recognition and practical applications of the deficiency diseases, including some of the anemias, a well-nigh new outlook has been reached. In the study of the hormones knowledge has progressed far, though, as Langdon-Brown points out, Starling's theory of chemical control of the body had been enunciated by 1905. The applications of chemistry and physics to medicine have also increased enormously during this time. The chemical analysis of the tissues, especially of the blood, has improved diagnosis, prognosis and treatment in manifold ways. The last twenty-five years has seen the dawn of a new era in psychotherapy, though internecine struggles and dictatorships have delayed its more general applications.

In surgery, as in medicine, much accomplishment can be visualized. Aside from technical improvements the physiologic relations of surgery have gained as compared with the anatomic. The application of such principles has been especially conspicuous in the fields of orthopedic, thoracic and plastic surgery. During this period roentgen therapy has developed remarkably as an aid to surgery, though its indications and limitations are not yet completely defined.

Fairbairn calls attention to the permeation of the fields of obstetrics and gynecology by the principles of constructive hygiene and preventive medicine. In the knowledge and spread of the value of antepartum care, obstetrics has received one of its most useful adjuncts. Coincidentally there has been a trend toward conservatism in the management of the toxemias of pregnancy. The management of both normal and abnormal delivery itself has benefited much by improvement in bacteriologic and technical refinements. More precise knowledge of the relations between the hormones and the menstrual cycle has done much for gynecology. The application of the Aschheim-Zondek test in the diagnosis of early pregnancy is only one indication of the specific advantages that may be expected from further pursuit of these problems.

A constant dissatisfaction with knowledge may thus be tempered by the consideration of the progress that has actually occurred during the last twenty-five years. There is no ground for complacency, however, in the present state of our information, but it is pleasant to realize that, by comparison with the course of progress elsewhere, medicine has no cause to feel that it has stood still.

1. Langdon-Brown, Walter: Progress in Medicine During the Last Twenty-Five Years, Brit. M. J. **1**: 909 (May 4) 1935. Wallace, Cuthbert: Progress in Surgery During the Last Twenty-Five Years, ibid., p. 912. Fairbairn, J. S.: Progress in Obstetrics and Gynecology During the Last Twenty-Five Years, ibid., p. 914.

METHYLENE BLUE IN CYANIDE POISONING

Agreement as to the mechanism of the action of methylene blue in cyanide poisoning has not yet been reached. Wendel[1] has studied this question by a series of carefully planned observations on dogs. He corroborated other observers in failing to note an accumulation of methemoglobin in the blood of dogs twenty minutes or more after intravenous injection of therapeutically employed quantities of methylene blue. In his opinion, however, this fact does not signify the nonformation of methemoglobin or its failure to play the essential part in the protective mechanism. In order to test this opinion, blood was withdrawn from normal dogs and defibrinated. The erythrocytes were separated from the serum by centrifugation, treated with physiologic solution of sodium chloride containing amyl nitrite to convert the hemoglobin to methemoglobin, freed from excess nitrite by repeated washing, and finally suspended in an equal volume of salt solution. This was reinjected intravenously into the animal from which it was taken either before or after injection of 1 minimum lethal dose of hydrocyanic acid (4 mg. per kilogram subcutaneously). The two animals that received the cell suspension before the cyanide showed only mild and fleeting symptoms of poisoning, although less than three minutes was devoted to injection of the cyanide and the amount of cyanide injected was calculated to react with more than half of the methemoglobin in the circulation. A fraction of this quantity produces death in unprotected animals almost immediately. The two dogs that received cyanide before the cell suspension were quickly revived from advanced symptoms of poisoning. Recovery following injection

1. Wendel, W. B.: Methylene Blue, Methemoglobin, and Cyanide Poisoning, J. Pharmacol. & Exper. Therap. **54**: 283 (July) 1935.

of methemoglobin-containing cells was much more rapid than that afforded by injection of either methylene blue or nitrite. It was thus demonstrated that cyanide reacts rapidly and firmly with intracorpuscular methemoglobin in vivo.

The conflicting observations on methemoglobin accumulation following injection of methylene blue alone has led to confusion regarding the mechanism of its action in cyanide poisoning. In order to determine this action a dog was given 21 cc. of a 1 per cent solution of methylene blue intravenously and shortly thereafter 1 minimum lethal dose of cyanide subcutaneously. The procedure was repeated about one hour and twenty minutes later with 14.5 cc. of methylene blue and 1 minimum lethal dose of cyanide. Blood samples were collected before and after the injections. After centrifugation, the cells were washed twice with and suspended in sufficient Locke's solution to attain the original volume. The suspension of cells was then analyzed manometrically for oxygen capacity and spectrophotometrically for total pigment. The difference between these two values, the oxygen capacity being corrected for physically dissolved oxygen, is taken as a measure of preformed (in vivo) cyanmethemoglobin. About 70 per cent of administered cyanide was bound in the blood by methemoglobin. In another experiment a dog received subcutaneously in a single injection 2 minimum lethal doses of cyanide. This was followed by a slow continuous intravenous injection of 0.5 per cent methylene blue solution over a period of thirty minutes. In this instance 86 per cent of administered cyanide was bound in the circulating erythrocytes.

The apparently anomalous situation is explained by the known effects of cyanide on the reactions occurring within erythrocytes containing methylene blue. The principal action of methylene blue in counteracting the toxic effects of cyanide appears to depend, therefore, on methemoglobin formation. In the absence of experimental demonstrations that methylene blue can replace the cyanide-sensitive catalysts that are concerned with vital processes, the methemoglobin explanation appears to be all that is required.

CLINICAL ENDOCRINOLOGY

In February THE JOURNAL began publication of a series of articles on Glandular Physiology and Therapy, prepared under the auspices of the Council on Pharmacy and Chemistry. This series, which comprises thirty-two sections covering practically every known phase of endocrinology, is now completed and will soon be issued in book form. Preparation of the series was undertaken primarily to provide a convenient and authoritative source of information for physicians so that glandular therapy might be placed on a more rational plane. Investigators and teachers, however, will find it a valuable reference work. In addition, many of the reviews will be of assistance to the Council on Pharmacy and Chemistry in evaluating the various endocrine preparations now so extravagantly extolled by pharmaceutical manufacturers. Almost without exception, the conclusions of the authorities in their respective fields have upheld the action of the Council in refusing to accept for New and Nonofficial Remedies, without more evidence, many of the widely used glandular products.

Commercial propaganda, together with an insufficient skepticism on the part of physicians, has led to widespread misapplication of present knowledge in endocrinology. Estrogenic and gonadotropic preparations are extensively employed in clinical syndromes in which they can hardly be expected to produce therapeutic benefit and in which they may even do harm. Commercial extracts of the adrenal cortex, recently shown to be practically devoid of the essential life-sustaining principle of the gland, are being used in the treatment not only of Addison's disease but even of such conditions as glaucoma. A variety of glandular products are administered by mouth, by which route many of them cannot be expected to prove effective even if they contain active material. Most of them do not! Pluriglandular products are widely employed with little rational basis and less therapeutic effect.

Misapprehensions in endocrinology are also extended to surgery and to radiology. The practice of partial adrenalectomy or adrenal denervation for the relief of hypertension, diabetes, hyperthyroidism, peptic ulcer and other conditions is by no means established as of value. Operation on this gland is an exceedingly hazardous procedure, and the mortality rates are most discouraging. The adrenal gland is essential to life; it lies in a nest of highly sensitive nerve structures. Even if therapeutic benefit might be expected to accrue from such surgical manipulations, the hazard to the life and health of the individual may prove greater than that of the disease it is proposed to alleviate. Furthermore, Addison's disease may be added to the original condition.

Radiologists have been irradiating the pituitary in the treatment of certain menstrual disorders, hypertension and other conditions; the adrenals have also been exposed to roentgen rays in the hope of lowering high blood pressure or decreasing the insulin requirement in diabetes. These procedures, too, may have effects more serious than the original disorder.

The cooperative efforts of the twenty-six authors who have prepared the series on Glandular Physiology and Therapy, in which all these questions are considered, should fill an important place in the armamentarium of both physician and investigator. Requests have been received from many foreign countries for the rights to translate this series of articles into other languages. It is hoped that American physicians will avail themselves of this book and use it as a guide to sound endocrine therapy.

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Current Comment

HISTORY REPEATS IN AMERICAN MEDICAL EDUCATION

Thirty years ago there were in the United States 160 medical schools with an enrolment of 26,147. Ten years later, as a result of the investigations of the Council on Medical Education and of the publicity afforded by the Carnegie Foundation for the Advancement of Teaching, the number of schools had been reduced to ninety-six and the enrolment to 14,891. Shortly after 1918, when the war ended, there was manifested a tendency to increase; in 1925 the number of students was 18,200. During the academic year just closed it was 22,888. We have returned nearly to the place where we were when the Council was created. True, the number of schools has not increased with the growing enrolments of recent years. Our 23,000 medical students today are distributed among fewer and better medical schools than were the students of a generation ago. But the factors that caused such deplorable conditions then are evidently again at work. These factors are the almost complete dependence on the income from tuition fees for the maintenance of the school and consequent failure to limit admissions to carefully selected and well qualified students. Unless this tendency is overcome there must result, inevitably, a lowering of the standards of medical education and practice. The tendency has been receiving the attention of the Council. Educators, state boards of examination, physicians and public authorities may well also give it their consideration.

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INCOMPLETE SCHOOLS

When the American Medical Association undertook, more than a quarter of a century ago, to appraise the medical schools of that day, some were located in small communities where, for obvious reasons, clinical material sufficient for teaching purposes was not available. Such schools, therefore, finding themselves quite unable to carry out the full four-year program of medical instruction, restricted their efforts to the first two years of the curriculum. At that time the first two years were wholly occupied with preclinical subjects, such as anatomy, physiology and chemistry. In recent years there has been, among those schools teaching the full course, a strong trend in the direction of bringing the clinical subjects into closer coordination with the preclinical. This means that physical and laboratory diagnosis are usually taught in the second year, that gross and microscopic anatomy are likewise a part of the second year curriculum, and that introductory clinical lectures are closely correlated with the so-called laboratory subjects. Those schools which, because of their limitations, offered only two years of medicine were unable to participate in this development because, located as they were, clinical facilities were nonexistent. It has become increasingly difficult for the students of such institutions to make the transfer that is necessary to enable them to complete their training. The present status of these incomplete schools is therefore unsatisfactory. With the completion of the current survey of medical education it is hoped that a solution of this problem will be found.

NEW OBJECTIVES FOR THE BUREAU OF THE CENSUS

For about a third of a century the fundamental task of the Bureau of the Census in the field of vital statistics was to extend the registration areas for births and deaths. With the completion of both areas in 1933, when Texas was admitted, the primary responsibility of the bureau was ended. New tasks are now to be undertaken, and a reorganization of the division of vital statistics has been announced. The Bureau of the Census now looks forward to country-wide registration as a means of furnishing comprehensive data for the first time. More intensive efforts are foreseen in analyzing the data and presenting more refined results, thus giving a better statistical basis for public health work and for studies of changes in the structure of the population. It is still necessary, however, to work toward more accurate and complete recording of births and deaths. Physicians are vitally interested in the Bureau of the Census, since they initiate the reports on which figures compiled by the bureau must be based. The medical profession may well endorse the stated ambition of the director of the census "to build up the bureau to a point where it may, without challenge, be regarded as the best . . . statistical organization in the world." [1]

GRADUATE SCHOOLS OF MEDICINE

Growing demands for training in special fields of medicine have given greater significance to the available types of graduate instruction. To present, as clearly as possible, a picture of existing opportunities for advanced study, the Council on Medical Education and Hospitals has obtained reports from all universities having faculties of medicine and has presented the results in table 16 of its report in this issue (page 689). Two universities have separately organized graduate schools of medicine. Twenty-nine report that they offer systematic courses of instruction for physicians. An apprenticeship type of training through residencies or fellowships is available in fifty-three institutions. Extension teaching of a less formal sort is conducted by nineteen schools, and as many more do not engage in any form of postgraduate work. Graduate teaching is a heavy tax on the resources of an institution, and not many of our schools are equipped to engage extensively in this work. This is particularly true of the intensive courses demanded by physicians who have already engaged in practice. Generally speaking, they are able to pay in cash for what they want, but because of greater earning power and social responsibilities they cannot devote any unnecessary time to this phase of training. Younger men who have never practiced may be quite willing to pay for experience with time and services after the traditional manner of apprentices.

1. Department of Commerce, Bureau of the Census, Communication "To Those Professionally Interested," under date of July 1, 1935.

Association News

RADIO BROADCASTS

The American Medical Association will broadcast over the Blue network of the National Broadcasting Company at 5 p. m. eastern standard time (4 o'clock central standard time, 3 o'clock mountain time) October 1 and each Tuesday thereafter, presenting a dramatized program with incidental music under the general theme of "Medical Emergencies and How They Are Met." The title of the program will be Your Health. The program will be recognizable by a musical salutation through which the voice of the announcer will offer a toast: "Ladies and Gentlemen, Your Health!" The theme of the program will be repeated each week in the opening announcement, which informs the listener that the same medical knowledge and the same doctors that are mobilized for the meeting of grave medical emergencies are available in every community, day and night, for the promotion of the health of the people. Each program will include a brief talk dealing with the central theme of the individual broadcast.

The October schedule is as follows:

October 1. Burns, Morris Fishbein, M.D.
October 8. Hazards from Foreign Shores, W. W. Bauer, M.D.
October 15. Unconsciousness, Morris Fishbein, M.D.
October 22. Asphyxiation, W. W. Bauer, M.D.
October 29. To be announced.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

CONNECTICUT

One July Fourth Accident.—One injury from a Fourth of July accident was reported in New Haven this year, as compared with a record of one death and 103 injuries in fireworks accidents in 1934. The reduction is credited to the city's new fireworks ordinance, which forbids the use and sale of fireworks and which was adopted by the board of aldermen following an educational campaign sponsored by the New Haven Department of Health. The educational campaign last year followed a meeting of representatives of civic organizations with the department of health, July 18, at which a resolution was adopted urging the passage of the ordinance. The one injury this year was that of a policeman, who was slightly injured when taking a blank cartridge pistol from a youth in the act of discharging it.

The Eleventh Clinical Congress.—The Connecticut State Medical Society will hold its eleventh clinical congress in New Haven, September 17-19. A commercial exhibit will be shown in the new Tompkins East 1 of the New Haven Hospital, a new feature this year. Afternoon sessions each day will be devoted to demonstrations and round table discussions by Connecticut physicians on the subjects discussed at the morning sessions. Papers will be read by the following physicians:

William D. Stroud, Philadelphia, Factors That Lead to Vascular Degeneration.
Herrman L. Blumgart, Boston, Value of Total Thyroidectomy in Treating Patients with Congestive Heart Failure and Angina Pectoris.
Perrin H. Long, Baltimore, The Common Cold.
Soma Weiss, Boston, Clinical Use of Sedatives with Particular Reference to the Barbituric Acid Derivatives.
Donald Munro, Boston, Modern Treatment of Craniocerebral Injuries, with Especial Reference to the Maximum Permissible Mortality Rate.
Frank H. Lahey, Boston, Newer Conceptions of Anesthesia and Anesthetists.
Dudley Merrill, Boston, Dangers Inherent in the Clinical Diagnosis of Cancer.
Dana W. Atchley, New York, Occurrence and Treatment of Shock in Clinical Medicine.
Edward A. Schumann, Philadelphia, Labor.
Charles Hendee Smith, New York, Care of the Tuberculosis of Childhood in the Home.
Francis W. O'Connor, New York, Common Parasitic Diseases in the New England States.
John J. Moorhead, New York, Early Treatment of Fractures of Long Bones.

At one evening session, Dr. Louis P. Hamburger, associate in medicine, Johns Hopkins University School of Medicine, Baltimore, will speak on "The Importance of a Discussion of Minor Ailments in the Medical Curriculum."

GEORGIA

Date of Annual Meeting Changed.—To avoid conflict with the annual session of the American Medical Association, the eighty-seventh annual meeting of the Medical Association of Georgia will be held April 21-24, 1936, instead of May 11-15 as previously announced.

Campaign Against Diphtheria.—The state department of health is conducting an immunization campaign against diphtheria, it is announced. In a statement urging parents to cooperate with the department, the director of public health, Dr. Thomas F. Abercrombie, Atlanta, points out that the death rate from diphtheria has increased from 4.6 per cent in 1930 to 6 per cent in 1934.

Society News.—Dr. William W. Anderson, Atlanta, was elected president of the Georgia Pediatric Society at the recent annual meeting, and Dr. Roger W. Dickson, Atlanta, was named secretary. The next annual session will be held at Atlanta. ——At a meeting of the First District Medical Society in Savannah, July 17, speakers included Drs. Carl C. Aven, Atlanta, on "Prevention and Treatment of Lung Abscesses," and John D. Martin Jr. and Alfonso J. Mooney Jr., Atlanta, "Tannic Acid Treatment of Burns."——The Spalding County Medical Society was addressed at Griffin, June 18, by Drs. Thomas P. Goodwyn and Henry Walker Jernigan, Atlanta, on "Fractures of the Ankle."——Speakers before the Fourth District Medical Society at Warm Springs, August 7, included Drs. David Henry Poer, Atlanta, treatment of thyroid diseases, and Charles E. Irwin, problems of poliomyelitis.——Dr. Leonard R. Massengale read a paper on "Acute Glomerulonephritis" before the Randolph County Medical Society in Cuthbert, August 1.——At a meeting of the Tenth District Medical Society in Elberton, August 14, speakers included Drs. Joseph E. Johnson Jr., Elberton, on chorea, and Henry W. Birdsong, Athens, agranulocytosis.

ILLINOIS

Public Health Survey.—Illinois will receive $425,000 from a federal appropriation of $3,450,000 for a public health survey in representative urban and rural communities under the Works Progress Administration. A house to house canvass will be made to determine the prevalence of chronic diseases and illnesses of long standing in samples of the general population of various income levels. Physical examinations of a smaller sample of the surveyed persons will be made by physicians to supplement available hospital records to evaluate the accuracy of the canvass reports. A survey of medical facilities will also be made, with especial reference to chronic diseases.

Chicago

Personal.—Dr. Hubbard Prather Saunders is the winner of the VanDerslice Cup of the Chicago Medical Society with a gross score of 80. Dr. Saunders and Dr. Frank S. Needham tied for first place with an 84 in the society's annual golf tournament at the Medinah Country Club, August 7, and the tie was played off, August 13.

IOWA

Society News.—The Linn County Medical Society will be addressed, September 12, by Dr. John F. Erdmann, New York, on "Cholecystitis, Cholangeitis, Choledochitis."——Speakers before the Buchanan County Medical Society, July 18, were Drs. Joseph G. Mayo and Hugh Cabot, both of Rochester, Minn., on hyperinsulinism and tuberculosis of the genito-urinary tract, respectively.——At a meeting of the Dallas-Guthrie Counties Medical Society, July 30, Dr. John T. Strawn, Des Moines, discussed carcinoma of the stomach, and Dr. Keith W. Diddy, Perry, differential diagnosis of acute conditions of the upper part of the abdomen.——At a joint meeting of the Dickinson and Emmet county medical societies in Estherville, July 18, speakers were Drs. Oscar H. Miller, Estherville, on aplastic anemia; Elam E. Lashbrook, Estherville, purpura, and William E. Bullock, Lake Park, hemophilia.——Dr. James B. Carey, Minneapolis, discussed the anemias before the Floyd County Medical Society at a meeting in Charles City, July 23.

KENTUCKY

Personal.—Dr. Theodore W. Singer, Louisville, celebrated his one hundredth birthday July 25. Dr. Singer was born in Cleveland and studied medicine at Hudson Medical College, which became a part of the Western Reserve University School of Medicine. He has practiced in Cleveland, Milwaukee and Chicago and still has a limited practice, it is reported. He served in the Civil and Spanish-American wars. A group of physicians headed by Dr. Leon L. Solomon gave a small reception for Dr. Singer on his birthday.

Society News.—A graduate course in pediatrics was presented before the Hopkins County Medical Society, Madisonville, June 19, by Drs. Philip F. Barbour and Harry S. Andrews, Louisville. Dr. Barbour discussed birth injuries, appendicitis in children and rheumatism; Dr. Andrews, anemias in children, communicable diseases and diarrhea.——Drs. Wallace Frank and Charles D. Enfield, Louisville, as guest speakers discussed cancer before the Seventh District Medical Society in Somerset, June 20.——At a meeting of the Muldraugh Hill Medical Society at Elizabethtown, August 8, speakers were Drs. Nelson D. Widmer, Lebanon, "Medical Treatment of Peptic Ulcer"; Walter I. Hume, Louisville, "Thyroid Problems"; Virgil E. Simpson, Louisville, "Preview of Economic Security in Kentucky," and William Hamilton Long, Louisville, "Status Lymphaticus."

MASSACHUSETTS

Relief Project for Physicians.—The *New England Journal of Medicine* announces a plan whereby resident physicians of Boston who are in urgent need of financial relief will be given medical employment. The project will be maintained by the state emergency relief association and will be under the direction of Dr. Charles F. Wilinsky of the Boston Health Department. Applicants must be legal practitioners of medicine, residents of Boston, and in such financial need that they are eligible for aid from the emergency relief association. Applications should be made first to the secretary of the proper district medical society.

MICHIGAN

Grants to University.—Fourteen thousand dollars has been appropriated by the Rockefeller Foundation to the University of Michigan for study of the application of spectroscopic methods to medical problems, under the general direction of Dr. Louis H. Newburgh, professor of clinical investigation in internal medicine, and Harrison M. Randall, Ph.D., professor of physics, University of Michigan, Ann Arbor. Funds not to exceed $5,000 annually have been provided for a five year period to end June 30, 1940, for special research in the physiology of respiration under the direction of Dr. Robert Gesell.

Uncommon Diseases Reported.—Although in very small numbers, the following variety of diseases have been reported to the Detroit Health Department since January 1: one case of leprosy, eleven cases of undulant fever, twenty-one cases of malaria, and, since April 1, nine cases of typhoid. One paratyphoid fever carrier was reported and four carriers of typhoid. Thirteen cases of amebic dysentery have been recorded since January 1, four cases of trichinosis, three cases of tularemia, and one case of tetanus. The department points out that the last case of smallpox reported in Detroit was on Aug. 3, 1931, and the last death from this disease occurred in 1925.

The Children's Institute.—The work of caring for orphan children in Michigan will in the future be handled in Ann Arbor under the name of the Michigan Children's Institute, in accordance with recent legislation. These children have in the past been housed in an institution in Coldwater. Under the new plan, an attempt will be made to have them placed in private homes so that they may be brought up in a more normal condition than that provided in an institution. Ann Arbor was selected because the University Hospital can give the medical and psychologic examinations necessary for successful placement. It was reported that the state welfare commission had available $202,840 for the project. A large residence with accommodations for about thirty children will be maintained in the city for temporary shelter.

MINNESOTA

Personal.—Dr. Charles R. Drake has been elected president of the Minneapolis board of education.——Dr. William W. Will, Bertha, newly elected president of the Minnesota State Medical Association, was recently guest of honor at a dinner given by the Todd County Medical Society.

Society News.—Dr. Eugene T. Leddy, Rochester, was elected president of the Minnesota Radiological Society at its annual meeting in Minneapolis, June 24; Dr. John Richards Aurelius, St. Paul, vice president, and Dr. Leo G. Rigler, Minneapolis, secretary.——At a meeting of the Scott-Carver Counties Medical Society in Arlington, July 9, Dr. Harry G. Irvine, Minneapolis, discussed therapy of dermatitis and Dr. Earl A. Loomis, Minneapolis, diseases of the eye, ear, nose and throat.——At the annual meeting of the Wabasha County Medical Society at Old Frontenac, July 11, speakers included Drs. Rudolph C. Radabaugh, Hastings, "Fecal Impaction Following Cholecystitis"; Alfred E. Belitz, Pepin, Wis., "Breech Presentation"; George A. Earl, St. Paul, "Injection Method versus Open Treatment of Hernia"; Harold E. Hullsiek, St. Paul, "Diagnosis and Office Treatment of Diseases of the Rectum," and Edward H. Rynearson, Rochester, "Summary of the Present Knowledge of the Hormones of the Anterior Lobe of the Pituitary Gland."

MISSISSIPPI

Society Makes Rules for Members Testifying in Malpractice Suits.—The Central Medical Society recently adopted a resolution forbidding its members "to give voluntary evidence in any malpractice action, unless the proposed testimony has been previously examined and approved by those designated by the society for the purpose." In an action of this sort, the president of the society will appoint an "investigator" to call on medical witnesses of the plaintiff to submit to him their proposed testimony in writing. The investigator after impartial consideration will submit the testimony and his opinion to three members who will be known as "consultants." If the results of the investigation and the opinion of the consultants support the testimony on the part of the plaintiff, the physician will be encouraged to testify; on the other hand, should the report indicate that the proposed testimony will wrongfully disparage the defendant's reputation and will not serve justice, the plaintiff's physician will be notified that the testimony is not approved and that members of the society will so state in court. If, irrespective of this decision and advice, the testimony deemed objectionable is given, the member giving it will be expelled from the society for unprofessional conduct.

MISSOURI

Joint Health Meeting.—The Missouri Public Health Association and the Missouri Tuberculosis Association will hold a joint session at the Muehlebach Hotel, Kansas City, September 5-7. The following persons will speak:

William De Kleine, M.D., medical adviser, American Red Cross, Washington, D. C., The Medical and Health Aspect of Red Cross Disaster Work.
Paul A. Witty, Ph.D., Chicago, Relation of Mental to Physical Health.
Caroline Hedger, M.A., Chicago, Health of the Adolescent.
Edwin Lee Miller, M.D., Kansas City, The State and Public Health.
Reginald M. Atwater, M.D., New York, Team Work in Public Health.
Chester A. Stewart, M.D., Minneapolis, The Lymanhurst Interpretation of Tuberculosis.

NEW YORK

Personal.—Dr. Harold Jackson Davis, assistant director of local health administration of the state department of health, Albany, has been assigned as part-time consultant in medical care to the Works Progress Administration; Dr. Davis will pass on the professional aspects of all projects of the administration, submitted from upstate New York, which involve the employment of physicians, dentists, nurses and other health workers on a security wage. He will act also as liaison officer between the administration, the state and local departments of health and the state, and local medical and other professional societies. He will serve also as technical adviser to the state compensation officer in regard to the professional aspects of the medical care and treatment provided to workers of the Works Progress Administration who are disabled in line of duty.

New York City

Course in Psychoanalysis.—The New York Psychoanalytic Institute announces an introductory course in "Psychoanalysis in Medicine" for physicians, to begin October 3 and continue for twelve Thursdays, except November 28. The lectures will be given by Drs. Clarence P. Oberndorf, A. A. Brill, Sandor Lorand and Philip R. Lehrman.

Changes at New York University.—The following promotions were recently announced by New York University College of Medicine:

Dr. James A. Shannon, to be assistant professor of physiology.
Dr. Meyer J. Kutisker, assistant clinical professor of surgery.
Dr. Edward M. Livingston, assistant clinical professor of surgery.

A plan for graduate study in radiology leading to the degree of doctor of medical science was approved at a recent meeting of the council and added to the list of similar courses already offered in other departments.

Opening for Bacteriologist.—The Municipal Civil Service Commission announces an examination for the position of associate director of the bacteriologic laboratories in the health department. Applications will be received up to October 4, and the dates for the examination will be announced later. All qualified citizens of the United States are eligible for the examination, but the appointee must reside in New York after he has accepted the position. Applicants must be not more than 55 years of age and have not less than five years of satisfactory

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experience in a bacteriologic laboratory of recognized standing. Applications should be sent to William H. Allen, secretary, Municipal Civil Service Commission, Room 1400, Municipal Building, Manhattan. An examination for the position of director of the division of psychiatry, department of hospitals, Bellevue Hospitals, was announced in THE JOURNAL, August 10, page 443.

PENNSYLVANIA

District Meetings.—Dr. Nathan B. Van Etten, New York, Speaker of the House of Delegates of the American Medical Association, addressed the annual meeting of the Third Councilor District of the Medical Society of the State of Pennsylvania at Skytop Lodge in the Pocono Mountains, July 31, on medical economics. Officers of the state society also made addresses and the afternoon was spent at golf, tennis, cards, shooting, bathing, horseback riding and quoits.——At a meeting of the Fourth Councilor District at Eagles Mere, July 11, speakers included Drs. Moses Behrend, Philadelphia, on "Open Operation for Fractures"; Stuart W. Harrington, Rochester, Minn., "Clinical Diagnosis and Surgical Treatment of Tumors of the Breast," and Walter F. Donaldson, Pittsburgh, secretary of the Medical Society of the State of Pennsylvania, "County Medical Society Membership—A Privilege and a Social Obligation."——The Eighth and Ninth Councilor Districts of the Medical Society of the State of Pennsylvania held a combined meeting at the Pinecrest Country Club near Brookville, August 1. The following speakers were on the scientific program: Drs. Joseph A. Hepp, Pittsburgh, on "Differential Diagnosis of Leukorrhea"; James Andrew Merle Russell, Erie, "Deafness"; John W. Shirer, Pittsburgh, "Present Status of Endocrine Therapy," and Hubert C. King, Lakewood, Ohio, "Manifestations of Heart Failure in Middle Life." Officers of the state society discussed organization problems.

Philadelphia

Personal.—Dr. Stanley P. Reimann, director of the Lankenau Hospital research laboratory, has gone to Germany to attend cancer conferences at the biologic laboratory at Oppau, near Heidelberg. He will also visit the Free Cancer Hospital in London.

Medical Seminars Deferred.—The Philadelphia County Medical Society announces that the opening of its first medical seminar, on "Laboratory Methods and Clinical Application," has been postponed until November 29. This change has been made in view of the seminars on anesthesia that will be offered by the Philadelphia County Dental Society on six consecutive Fridays beginning October 18. The medical society will start its second seminar on Friday afternoon, January 3; parasites will be the theme of this series. The duration of these seminars will be four Fridays.

UTAH

State Medical Meeting at Logan.—The forty-first annual meeting of the Utah State Medical Association will be held in Logan, September 5-7, with headquarters at the Hotel Eccles and under the presidency of Dr. David C. Budge, Logan. The following guest speakers will present the program:

George E. Brown, M.D., Rochester, Minn., General Survey of Diseases of the Blood Vessels; Disorders of the Sympathetic Nervous System; Recent Developments in Investigations of Essential Hypertension.
Dean D. Lewis, M.D., Baltimore, Diseases of the Blood Vessels (Surgical); Differential Diagnosis of Bone Tumors; Differential Lesions of the Breast.
Karl F. Meyer, Ph.D., San Francisco, Sepsis; Present Status of Undulant Fever.
Claude F. Dixon, M.D., Rochester, Minn., Surgical Lesions of the Colon; Motion Picture Demonstration; Management of Acute Appendicitis; Prevention and Curative Measures Against Peritonitis.
George H. Gardner, M.D., Chicago, Retrodisplacement of the Uterus, Its Significance, the Indications for Treatment and the Choice of Treatment; Uterine Fibroids; Leukorrhea, Differential Diagnosis and Treatment.
William H. Holmes, M.D., Chicago, Common Neurologic Syndromes; Bright's Disease.
John A. Wolfer, M.D., Chicago, Consideration of the Nutritional Status of the Surgical Patient; Pancreatic Juice as a Factor in the Etiology of Gallbladder Disease.
William R. Cubbins, M.D., Chicago, Injured Cruciate Ligaments of the Knee Joint, Diagnosis and Methods of Repair; Fractures of the Humerus and Both Bones of the Arm; Fractures of the Acetabulum and Pelvis.

Dr. Meyer will address an evening public meeting at Logan Tabernacle, September 5, on "Plagues, Past and Present," illustrated by motion pictures. There will be a banquet Friday evening. The woman's auxiliary to the society will hold its annual session Thursday and Friday.

WISCONSIN

Drive Against Diphtheria.—The Milwaukee County Medical Society and the county health department conducted their annual campaign against diphtheria, July 15 to August 15. The city has had only fourteen cases thus far this year, it was said. Seventy-five clinics were to be held and it was hoped to immunize 7,500 children.

State Medical Meeting at Milwaukee.—The ninety-fourth annual meeting of the State Medical Society of Wisconsin will be held in Milwaukee, September 17-20, at the Milwaukee Auditorium. The preliminary program announces the following guest speakers with their subjects:

Dr. Fred L. Knowles, Fort Dodge, Iowa, Treatment of Fracture of the Neck of the Femur.
Dr. Albert Graeme Mitchell, Cincinnati, Nonspecific Factors Affecting the Tuberculin Reaction.
Dr. Arthur J. Patek, Jr., Boston, Present-Day Concepts in the Treatment of Anemia.
Dr. Aaron Arkin, Chicago, Tumors of the Lung and Their Differential Diagnosis.
Dr. Ursus V. Portmann, Cleveland, Factors that Influence the Curability of Cancer.
Dr. Louis G. Herrmann, Cincinnati, Treatment of Peripheral Vascular Diseases.
Dr. Ernest M. Hammes, St. Paul, Spinal Cord Injuries.
Dr. Henry W. F. Woltman, Rochester, Minn., Some Neurologic Postoperative Complications.
Dr. Frederick A. Coller, Ann Arbor, Mich., Water Balance of Sick Patients.
Dr. Simon Levin, Houghton, Mich., Dangers and Their Prevention in Operative Treatment of Goiters.
Dr. Charles M. McKenna, Chicago, Operative Technic for Cryptorchidism.
Dr. Vernon C. David, Chicago, Surgical Aspects of Carcinoma of the Rectum and Sigmoid (part of a symposium).
Dr. Fremont A. Chandler, Chicago, Aseptic Necrosis of the Head of the Femur.
Dr. Percival Bailey, Chicago, Peculiarities of Intracranial Tumors in Childhood.
Dr. Harold E. Robertson, Rochester, Minn., Value of Postmortem Examination to the Practice of Medicine.
Dr. Waltman Walters, Rochester, Operative Procedures Indicated in the Treatment of Peptic Ulcers.

Other visiting speakers will be Drs. Hugh Cabot and Gershom J. Thompson, Rochester, Minn., on the scientific program, and Dr. Edward H. Cary, Dallas, Texas, who will speak at the annual banquet at the Hotel Schroeder, Thursday evening, September 19. Dry clinics will be held at the Milwaukee County Hospital and the Milwaukee Children's Hospital Wednesday morning. There will be a hobby exhibit arranged by the Medical Society of Milwaukee County.

PUERTO RICO

Personal.—Dr. William Branch Porter, professor of medicine, Medical College of Virginia, Richmond, Va., has spent the past two months in San Juan, Puerto Rico, doing special investigative work on the blood flow in cases of anemia. Dr. Porter has carried on his experiments among patients hospitalized in the University Hospital of the School of Tropical Medicine, Mimiya Clinic and the Municipal Hospital.

Pan American Medical Congress.—En route to New York City from its cruise to Rio de Janeiro, Brazil, the Sixth Floating Congress of the Pan American Medical Association stopped off at San Juan, Puerto Rico, July 29. The School of Tropical Medicine contributed as its share in the entertainment program for the Congress a series of exhibits of the various phases of tropical diseases, on which the faculty of the school has been working. All departments of the school were represented. After viewing the exhibits, the visitors attended a symposium on tuberculosis, held under the auspices of the insular department of health.

Monthly Hospital Staff Conferences.—The medical men on the staffs of the various hospitals of San Juan, have planned a series of conferences, one of which will take place every month. These conferences are to be limited to scientific problems of actual interest in the daily work of the physicians taking part. At the last conference, August 9, the following program was presented:

Dr. Isaac F. Gonzalez Martinez, X-Ray Studies of Ulcers of the Duodenum.
Dr. Manuel Diaz-Garcia, Surgical Aspects Presented in an Operation for Ulcers of the Duodenum.
Dr. Antonio Martinez Alvarez, Histopathologic Study of the Autopsies of Three Cases of Intestinal Perforation.

Four New Hospitals for the Indigent.—Governor Blanton Winship of Puerto Rico has approved a project of the house of representatives (P. de la C. 55) authorizing the construction of four district hospitals to care for the indigent sick of the island. The administration of these hospitals will be vested in a board of seven members appointed by the governor; two will be ex officio members from the insular legislature; one will be a lawyer, one an engineer, one a pharmacist

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and the other two doctors of more than three years' experience. The construction of these hospitals is to be financed by a half a million dollar loan, their maintenance afterward to be cared for by special appropriations made from the yearly insular budget.

GENERAL

Committee to Study Sex Variants.—Announcement is made of the establishment of a committee for the study of sex variants with Dr. Eugen Kahn, Sterling professor of psychiatry and mental hygiene, Yale University School of Medicine, New Haven, as chairman. The committee will correlate the various scientific interests in this field, serve as a scientific sponsoring agency to further research on sexual variation, and appoint advisory subcommittees for projects sponsored or to be sponsored by the committee. A study of homosexuals of cultured background is already under way. The committee will be glad to consider any research projects that may be presented, which have a bearing on the physiologic, psychologic, psychiatric or sociological problems of sex variants, and to act in a sponsoring and advisory capacity should such projects be approved. All communications should be addressed to the secretary, Dr. Robert W. Laidlaw, at 199 Fort Washington Avenue, New York City. Dr. Laidlaw and Dr. Kahn, together with the treasurer, Carney Landis, Ph.D., Columbia University, Dr. Robert L. Dickinson of the National Committee on Maternal Health, and Dr. Josephine H. Kenyon, New York University, constitute the executive committee.

Sight Conservation Activities.—According to the annual report of the National Society for the Prevention of Blindness, for the first time, executives of practically all national safety, health and recreation agencies concerned with accidents from fireworks conferred on methods of procedure to eliminate such casualties. The society believes that the reduction of these accidents lies in the control of the manufacture of fireworks and in education of the public. About 250,000 publications were distributed at the request of 1,419 local communities in the United States and of forty-three foreign communities. There were about 420 showings of the society's film "Preventing Blindness and Saving Sight" reaching an audience of 29,532. Staff members participated in local sight conservation activities in eighty-six cities in twenty-one states, the District of Columbia, Canada and Europe. During the year a study of blindness among 2,700 children in schools for the blind was undertaken by a committee on statistics, which the society and other organizations are sponsoring. The results are expected "to determine more clearly along what lines prevention must proceed." It collaborated in the formulation of a national code on safety glass and cooperated with various local agencies interested in legislation requiring the use of safety glass in motor vehicles. It also sponsored the special training of several young women for duty in the social service departments of eye hospitals and eye clinics in Chicago, Pittsburgh and New Orleans. In 1934 the society's income was $96,900 and its expenditure $131,900, necessitating the use of $35,000 from its reserve fund.

Medical Bills in Congress.—*Changes in Status:* S. J. Res. 169 has passed the Senate, authorizing Drs. Hugh S. Cumming, Surgeon General of the United States Public Health Service, John D. Long, Medical Director, United States Public Health Service, Bolivar J. Lloyd, Medical Director, United States Public Health Service, and Clifford R. Eskey, surgeon, United States Public Health Service, to accept and wear certain decorations bestowed on them by the governments of Ecuador, Chile, Peru and Cuba. S. 3060 has passed the House, proposing, among other things, to extend the provisions of existing law providing hospitalization and domiciliary care for veterans so as to include men discharged from the Army, Navy, Marine Corps or Coast Guard who are in receipt of pension for service-connected disability. H. R. 9116 has passed the House and Senate, extending the provisions of veterans' laws and regulations to persons who served in Russia during the World War. H. R. 9185, the Liquor Tax Administration Act, has passed the House. It provides, among other things, that alcohol may be obtained tax free "for the use of any clinic operated for charity and not for profit, including use in the compounding of bona fide medicines for treatment outside of such clinics of patients thereof, but not for sale." *Bills Introduced:* H. R. 9145, introduced by Representative Lundeen, Minnesota, proposes to provide for the refunding of all benefits to Spanish-American War veterans and their widows and dependents of which they were deprived by the Economy Act. H. R. 9218, introduced by Representative Kramer, California, proposes to provide that certain service-connected disabilities shall be deemed to have been incurred in World War service.

FOREIGN

Society News.—There will be an International Congress for the Scientific Investigation of Population Problems in Berlin, August 26-September 1.——The International Association for Preventive Pediatrics (the medical section of the Save the Children International Union) will meet in Basle, Switzerland, September 20-21. Headquarters of the association are at 15, rue Levrier, Geneva.——Physicians in Tientsin, China, recently organized the Tientsin Medical Society, with Dr. Joseph A. Mendelson as president. Physicians visiting Tientsin are invited to attend the meetings, which are held the last Thursday in each month.

Conference on Tuberculosis.—At a meeting of the executive committee and the council of the International Union Against Tuberculosis in Paris, July 10-11, plans were made for the conference to be held in Lisbon, Portugal, September 8-10, 1936. The following subjects will be treated: "Radiologic Aspects of the Pulmonary Hilus and Their Interpretation," with the opening report by Prof. Lopo de Carvalho, Brazil; "Primary Tuberculous Infection in the Adolescent and the Adult," by Dr. Olaf Scheel, Norway; "The Open Case of Tuberculosis in Relation to Family and Domestic Associates," by Sir Henry Gauvain, London. At the scientific session Professor Thorvald Madsen, Copenhagen, reported on "Tuberculin Standardization and Tuberculin Tests," and Dr. Kendall Emerson, New York, on the work of American investigators of tuberculin.

Government Services

Dr. Dunham Named Director of Division of Maternal Health

Dr. Ethel C. Dunham, acting director of the division of maternal and child health, U. S. Children's Bureau, has been named director of the division, succeeding Dr. Martha M. Eliot, who was appointed assistant chief of the bureau last December. Dr. Dunham has been associate clinical professor of pediatrics at Yale University School of Medicine, New Haven, Conn., and has recently been designated lecturer in pediatrics at the school (THE JOURNAL, March 23, p. 1017). She graduated from Johns Hopkins University School of Medicine in 1918.

General Patterson Retires and Accepts Deanship

Major Gen. Robert U. Patterson, formerly surgeon general of the U. S. Army, will retire from the army, September 1, to become dean of the University of Oklahoma School of Medicine and superintendent of its hospital. Dr. Patterson applied for retirement on his return from Brussels, Belgium, where he represented the state department and the secretary of war at the International Medical Congress of Surgeons and Physicians. Born in Montreal, Canada, in 1877, Dr. Patterson graduated from McGill University in 1898 and from the Army Medical School in 1902. For his services abroad, General Patterson received the Distinguished Service Medal, also citations for "gallantry in action."

Dr. Hasseltine Ill with Psittacosis for Second Time

Dr. Hermon E. Hasseltine, U. S. Public Health Service, is ill in San Francisco with psittacosis. This is the second time that Dr. Hasseltine has had the disease, the first attack having occurred in 1930 in Washington, where he was making laboratory studies of the epidemic that then prevailed. For three years Dr. Hasseltine was in charge of the psittacosis laboratory of the public health service at Pasadena, which was closed several months ago. He was then detailed to San Francisco to make a study of bubonic plague. While he has not been in contact with parrots recently, it is believed he acquired the infection in Pasadena, July 10, from instruments used in previous studies, which he handled while packing them for shipment. He became ill July 25 and on July 28 was admitted to the marine hospital. He is now much improved. So far as the public health service is informed, this is the only instance of psittacosis occurring a second time of which there is record. In March 1930 Dr. Hasseltine suffered a moderately severe infection with psittacosis apparently acquired at the National Institute of Health, although definite history of his contact with infected birds could not be traced. His illness occurred at the time that ten other persons connected with the institution were infected. Two of this group were in direct contact with infected birds, but the means of transmission of the disease was not determined in the other cases. Dr. Hasseltine has been with the public health service for twenty-six years.

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Foreign Letters

LONDON

(From Our Regular Correspondent)

Aug. 3, 1935.

Alcohol and Road Accidents

The question of alcohol and road accidents has received much attention recently. At a meeting of the National Temperance League Mr. Ransom Pickard, president of the ophthalmologic section of the Royal Society of Medicine, pointed out that alcohol diminishes the vision of the peripheral retina before it affects central vision, the opposite to the rule that functions latest developed suffer first. The result is that moving objects are not so well discerned. The Carnegie Institution found that the taking of a little dilute alcohol affected the central vision less than 2 per cent, while it affected the peripheral vision up to 11 per cent. Moreover, alcohol prolongs the reaction time, particularly in a street where a bewildering choice of possibilities occur. A pint and a half of ale prolongs a simple reaction time by 9.7 per cent. Moreover, alcohol increases the sense of satisfaction at impaired performances and engenders a false security, sometimes even bravado, so that driving may be undertaken when dangerous. If a driver who took alcohol were conscious of his defects and took care and drove slowly, little harm might result; but this he cannot do. The same criticism applies to the pedestrian, for one who crosses the road with impaired neuromuscular equipment and similar cocksureness is likely to contribute to the casualty list.

At the invitation of the minister of transport a special committee of the British Medical Association consisting of some fifteen eminent physicians and surgeons has been studying the relation of alcohol to road accidents. Its report has now been presented. It concentrated on the effects of amounts of alcohol insufficient to produce what might be called drunkenness. Small amounts of alcohol lead many persons to make rapid decisions less judiciously than they otherwise would. To what extent this is responsible for automobile accidents there is no means of estimating, but it is a serious objection to the taking of alcohol, even in small amounts by any one who is to drive a car. Amounts corresponding to 2 or 3 ounces of whisky usually affect adversely the power of rapid and accurate coordination. At the same time the person may believe himself to be driving better. Last year 2,016 automobile drivers were certified by a physician to be under the influence of alcohol. It is beyond dispute that they were a potential source of accidents. But there must be a much larger number of drivers who would not be so certified and yet have their driving powers impaired by alcohol.

This report of the committee of the British Medical Association has produced considerable resentment among motorists, who declare that the conclusions are too sweeping. An official of the Automobile Association said: "These scientific deductions, while valuable in their own sphere, have no legislative weight. In some cases a stimulant may be beneficial to a motorist who is tired and may improve his driving ability."

Nutrition and Public Health

The League of Nations has issued a bulletin entitled "Nutrition and Public Health," by Edward Burnet and W. R. Aykroyd. No country in the world, it is stated, can claim that the whole of its population is satisfactorily fed. Poverty is mainly to blame, ignorance to a less extent. The so-called protective foods, richest in minerals and vitamins—milk, green vegetables, fresh fruit, eggs—are also the most expensive and in all countries are beyond the means of great masses of the population. The report alleges that in Great Britain between 10 and 25 per cent of the population "cannot afford a diet of the type and quality now known to be essential as a safeguard against malnutrition and disease." The existence of a group that could afford a complete diet but do not secure it, because of ignorance, is admitted. The report also claims that more than 22 per cent of the children in the United States investigated up to 1924 showed symptoms of malnutrition. "The fact that the greater part of the population of Africa and Asia suffer from insufficient and faulty feeding is no longer a secret. . . . While a world wheat surplus threatens economic stability, pellagra and beriberi, both diseases which consumption of wheat would eliminate, continue to take thousands of lives every year. One of the greatest needs of modern statesmanship is that governments seeking to dispose of food and governments needing such for the health of their citizens should find some basis of agreement."

In reply to the allegations and conclusions of this report it may be pointed out that the chief medical officer of the ministry of health has stated that the nutrition of the people of Great Britain is better than in any period of which there is record. Also the export of food is not a matter of government arrangement but of business. The surplus wheat of America can be brought to the doors of the millions of Asia and Africa only by payment of the cost of the article and its transport from the farm to the coast, across thousands of miles of ocean and then again up country. In many cases the natives could not pay a fraction of this cost, if indeed they are not in totally inaccessible places. The truth is that primitive and backward peoples must necessarily live on their local produce.

Report of Committee of House of Lords on Osteopaths Bill

The collapse of the osteopaths' attempt to obtain registration was reported in a previous letter. The house of lords referred the bill to a select committee, an unprecedented procedure in the case of the bill of a private member. When eminent witnesses testified that osteopathy had no scientific foundation, the osteopaths could not face this issue and withdrew their application, giving as the ostensible reason that the committee was not competent to try the issue. In spite of the withdrawal, the committee considered it a duty to report on the bill. The committee states that in all comparable cases of vocations for which a statutory register has been authorized three conditions have been fulfilled. 1. The sphere within which the vocation operates has been clearly defined. 2. The vocation has already long been in general use. 3. There has already been in existence a well established and efficient system of voluntary examination and registration. In the case of the osteopaths, none of these conditions have been fulfilled. No definition of osteopathy was included in the bill as introduced, and although one was subsequently proposed and others were suggested, none emerged which satisfactorily differentiated the osteopathic sphere of activity. Though widespread in the United States and Canada, osteopathy is carried on in the United Kingdom by not more than 2,000 or 3,000 practitioners, of whom only about 170 can claim to be "qualified." It is practically unknown on the continent of Europe. The only establishment in this country for the education and examination of osteopaths was exposed, in the course of evidence, as being of negligible importance, inefficient and, above all, in thoroughly dishonest hands. The only training ground for the qualified osteopath would be in North America, and it was pointed out by a representative of the ministry of health that "it is alien to the general principles which have so far been followed in comparable legislation to recognize qualifications which are conferred by foreign educational institutions." From the inquiry it emerged that osteopathy is not, as is popularly supposed, a craft limited to the treatment of maladies of bones, joints, muscles and ligaments by manipulation. In this sphere the committee has no doubt that qualified osteopaths perform valuable services.

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Osteopathy claims to be a method of treating all diseases. The committee finds that this claim has not been established and therefore reports that it would not be safe to recognize osteopaths on a footing similar to that of physicians. The question of a register for osteopaths should be deferred until the sphere of osteopathy has been defined and a system of education in its principles and practice has been developed in one or more well equipped institutions.

This report is satisfactory in its condemnation of the ridiculous claims of osteopaths, especially as it is unanimous, although the committee contained avowed supporters of osteopathy. These evidently had their eyes opened. But in their limited commendation the committee makes the mistake of confounding osteopathy with bone setting. As stated previously in THE JOURNAL, the osteopaths have encouraged and taken advantage of this mistake. The committee in using the phrase "education in the principles and practice of osteopathy" shows that it is in need of further enlightenment as to the nature of this fantastic cult.

A Polished Floor Costs Hospital Thousands of Dollars

A widow when visiting her son, a paying patient in the Westminster Hospital, put her foot on a mat, which slipped on a polished floor. She fell on her side and as a result of the accident her left leg was an inch shorter than the other. The injury sustained is not described in the report but it appears to have been a fracture of the femur. She brought an action against the hospital, contending that it was negligent in having on a slippery floor a mat without taking steps to ensure that it would be stable when trodden on. She admitted that in 1911 all her toes except the big toes had been amputated, but she stated that this had not made it difficult for her to keep her balance or in any way interfered with her activities. The judge said that the hospital authorities must have known that the floor was highly polished and the secretary had said that it was kept highly polished for antiseptic purposes. They ought to have known that it was dangerous to place a mat on a highly polished floor and that it might slip. They ought to have secured the mat. He awarded damages of $14,000.

The British Medical Association and Protection Against Chemical Warfare

At the representative meeting of the British Medical Association, held in London, three resolutions were submitted by the Kingston-on-Thames Division urging that instruction in anti-chemical warfare should be given to medical students, that similar instruction should be available for postgraduates, and that, in view of the necessity for educating the public in measures of protection against chemical warfare, the British Medical Association should ask for the cooperation of its members. It was urged that in the event of this country being involved in conflict with a European power we would quickly be subjected to attack by airplanes with all sorts of incendiary and gas bombs. At present all countries on the continent are realizing this. Mr. H. S. Souttar, chairman of the representatives and surgeon to the London Hospital, stated that recently he and the medical secretary were invited to a conference at the ministry of health, at which many other educational bodies were invited, to discuss the matter. The ministry of health and the war office were fully alive to the necessity of educating the civilian population in the matter. The authorities wished to make use of the British Medical Association for the purpose. Through their divisions they were in an exceptional position for diffusing the necessary knowledge among the physicians of the country. Every conceivable precaution would be taken to insure that the medical and nursing services of the country and the civilian population were trained in those matters. The resolutions were carried.

On behalf of the North Glamorgan and Brecon Division a resolution was then moved that the association should concentrate on the abolition of chemical warfare. An objection was made that it was not a political association. This was due to the fact that such resolutions generally emanate from socialists and extreme pacifists. The chairman, however, ruled that the resolution was not political. This resolution was carried and was referred to the council.

The Medical Work of the Mission to Lepers

The Mission to Lepers celebrated its diamond jubilee last year and has now published its sixtieth annual report. On the medical side larger numbers than ever have received special leprosy treatment and the results are as encouraging as in previous years. At fifty different stations—in India, China, Korea and Africa—9,157 patients were under treatment for not less than three months. Of these, 5,572 improved in varying degree and 1,413 were declared symptom free. Of the latter, 1,054 had arrested cases without deformity, and 704 were able to return to their own homes. Upward of 6,900 lepers were also treated as outpatients at the different homes. Injections of chaulmoogra or hydrocarpus oil and its derivatives continue to form the basis of most of the treatment. At some of the homes the patients under treatment have been trained to give injections and to act as nurses. More recently Christian ex-patients have taken charge of leprosy clinics in outlying villages. The constructive value of work among the children of lepers is being increasingly emphasized.

Standardized Dimensions for Hospital Wards

The Hospitals and Medical Services Committee of the London County Council has made a report proposing standardized dimensions for the wards of hospitals to be erected in the future. The committee stated that the standards in the past were mainly of cubic capacity and appear to have been based on such considerations as air pollution, about which there were no exact data. There was no real scientific foundation. The comfort and well being of the patient and his efficient treatment should be the determining factors. If these are provided for, all other considerations and theoretical formulas may be disregarded. The committee recommends a standard width of 26 feet for all wards in general hospitals. In wards for acute diseases (including maternity, tuberculosis, venereal and acute mental cases) the wall space per bed is to be 8 feet, height 11 feet up to a length of 50 feet and 12 feet above this length. In wards for chronic diseases the wall space per bed is to be 7 feet, but for offensive cases 8 feet; the height is the same as for the wards for acute cases. In cot wards the wall space per bed is to be 7 feet with the height as before. Single-bedded wards are to be not less than 11 by 10 feet with a height of 10 feet, or in conformity with the general plan. The resulting cubic capacity is less than was formerly considered necessary, when importance was attached to the height of wards as providing additional air space and heights up to 16 feet were the rule. It is now known that any height above 12 feet does little or nothing for ventilation, which depends on adequate window space. No ruling as to length of wards is laid down, but wards of 100 feet will probably not be constructed again.

Report on the Quetta Earthquake

The medical report on the Quetta earthquake throws new light on that appalling disaster. Col. A. J. H. Russell, public health commissioner, states that no fewer than 31,500 persons were evacuated from Quetta by rail. This suggests that previous official reports overestimated the death roll. In the early days of the disaster 2,500 dead were excavated. Assuming the original population of the city and cantonments to have been between 66,000 and 70,000, Colonel Russell infers that between 12,000 and 16,000 bodies lie under the ruins of Quetta city,

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although he admits that these figures are mere approximations. In his opinion the general health arrangements are adequate for the protection of both the troops and the civilian population. He upholds the prompt action of the authorities in sealing up the city on health grounds. The whole population in the refugee camps has been vaccinated and inoculated against epidemic diseases. Experimental excavations of the débris will be conducted in order to determine whether a general clearance of the buried city may be proceeded with without danger to the 18,000 people still living in the vicinity. There are difficulties and dangers in excavating an area which is a veritable graveyard of thousands of human beings and animals. Colonel Russell considers it inadvisable to undertake exhumations on any extensive scale, because of the nuisance that would arise from the stench and flies. For health reasons alone he considers it unwise to recruit a large force of workers.

The Methodist Church and Spiritual Healing

For the first time in the history of Methodism, the question of spiritual healing was raised at the annual conference. The question has often been discussed at meetings of the Church of England. Rev. L. D. Weatherhead moved a resolution urging that a special committee be set up to consider the whole question of spiritual healing. Mr. Weatherhead, who has published a number of books on psychology, said that in a large number of people who were ill the trouble was not physical in origin and also not mental. It was spiritual in origin. Such people were not adequately treated by the physician or the psychotherapist. Many methods practiced under the heading of spiritual healing were not sound. Any method that was practiced must be one that would go hand in hand with the discoveries of medicine and surgery. A committee of physicians, ministers and laymen was wanted to find out what methods were sound, to correlate ideas, collect evidence, and see whether any valuable rapprochement was possible between their profession and the medical profession. The resolution was passed unanimously.

The Smell Society

The Smell Society has just been formed "with the intention of restoring the sense of smell to the high position it holds among all higher animals other than man." Its work will be to replace the unpleasant and noxious smells that civilization has introduced by the pleasant smells that have been lost. In a letter to the *Times* announcing the formation of this society, the writer assures readers that, though they may at present be mildly amused, the Smell Society will in a year's time be a powerful body. He says that the subject is a wide one and goes far beyond appreciation and pleasure into the realms of health. For instance, an essential part of good cooking is the fact that smell prepares the body for the reception of food. The *Times* takes the project seriously, devoting to it an editorial three fourths of a column long. The society proposes to make people more smell conscious. But here the difficulty begins, for many people prefer not to be smell conscious. There is the difficulty that civilization has brought with it so many bad smells that the disadvantages of being sensitive to smells will outweigh the advantages. But sanitation has left our cities smelling good because they smell of nothing.

Salaried Midwives

In considering methods of improving the midwifery service, the low earnings of midwives and the consequent attraction into that calling of an inferior class of women has received attention. One remedy proposed was the support by the state of salaried midwives. At a meeting of the London County Council it was decided to inform the minister of health that the council supported a recommendation to establish a salaried midwives service under the local authorities, subject to a satisfactory grant-in-aid from national funds.

PARIS

(From Our Regular Correspondent)

July 19, 1935.

Discontentment over Social Insurance Deficits

The social insurance law is now five years old, but from all sides come complaints that it has not proved to be the success that was expected. In attempting to balance its budget, the government has planned to save 400 million francs (about 25 million dollars) annually through economies in the administration of the law. One of the members of the chamber of deputies has asked for an emergency revision of the law because the premiums that insured workers are obliged to pay are a burden hard to bear. More than four billion francs (about 250 million dollars) is taken "out of the pockets of employers and employees every year and most of it is stowed away (thesaurized) in the sinking funds of the various organisms of the law," according to this legislator. The premiums must be reduced in line with a general effort to lower the cost of living in France.

Finally, in the *Siècle médical* of recent date appears an article entitled "a decisive change," which states that one of the chief objectives of the social insurance law, an effort to prevent disease by better sanitary organization of the country, is at last in the first stages of fulfilment. One is also much concerned about deficits in the budgets of the primary distributing agencies, or "caisses," of the social insurance law. These collect the premiums from the employers and employees and disburse benefits for illness, maternity cases and deaths. These "caisses primaires" insure themselves in a sort of central government agency termed the "Union of reassurance."

At a recent meeting of all of these reassurance societies it was found that the "caisses primaires" were in a bad way financially and that surely next year, if not already this year, there would be deficits.

These "caisses primaires" during 1930-1931 distributed only 40 per cent of their income, whereas in 1934 the proportion rose to 89.5 per cent. The average premium dropped from 70 francs ($3.75) a month in 1930-1931 to 63.7 francs in 1934, or about 10 per cent. This drop in revenue is more marked in the departments outside Paris than in the latter city. The reverse is true of the disbursements.

Out of 103 of the "caisses primaires" (primary collecting and distributing agencies) insuring 1,220,000 workers, thirty-nine are in deficit for sickness insurance, seventeen for maternity insurance and nineteen for death benefits. These financial difficulties will be combated in the future by the Reassurance Union lending money on more liberal and longer terms to the caisses primaires. As stated in previous letters, one of the drawbacks to the present social insurance law is the thesaurization, i. e., keeping out of circulation, vast sums of money by the central organizations which are constituted by the "Union of Reassurance" and by the "guaranty fund." The former is the custodian of sickness, maternity and death insurance premiums and the latter for old age insurance premiums.

These huge sums of money under the control of these "higher-up" links in the social insurance chain are not always wisely invested and there has been much open criticism of this feature of the law. The latter dates only from 1930 and it will be many years before those who are now paying for old age insurance will reach the age of 65 and demand reimbursement for sums paid in many cases over a period of from thirty to forty years. No secret is made of the criticism of the poor investments, entailing much loss of money, which have been made by the trustees of some of these funds.

The experiment in social insurance in France has been far less successful than was hoped or promised. The attitude of the medical profession is becoming more and more bitter in these days of crisis.

Hemiplegia Following Exploratory Puncture of Chest

At the May 10 meeting of the Société médicale des hôpitaux, Sergent and his associates called attention to embolism as an accident in exploratory puncture of the chest. They reported a case in 1933 and now report a second case. One can best explain such a complication as being due to the entrance into the pulmonary circulation of an embolus composed of blood mixed with air, as demonstrated experimentally by Komis and others.

In Sergent's second case, an exploratory puncture was made preliminary to operation for a pulmonary abscess, following removal under anesthesia of infected teeth. The embolism occurred during the second step of the drainage of the abscess, adhesions having been established during a first intervention under local anesthesia four days previously.

Immediately after exploratory puncture of the exposed lobe containing the abscess and withdrawal of a bloody, frothy fluid, a right hemiplegia with aphasia, right conjugate deviation and amaurosis appeared. All these symptoms disappeared during the three days following the exploratory puncture. One can best explain such accidents by the existence of a simultaneous injury of a bronchus and a pulmonary vein and the transportation of an embolus composed of blood and air.

A vascular spasm of the left sylvian and right posterior cerebral arteries is believed by Sergent to have played as important a part in the brain symptoms as the mechanical obliteration of the vessels by the embolus.

In the discussion, Justin Besançon reported some experimental work on dogs which confirmed the rôle of vascular spasm. Following embolism of the vessels of the right eye one finds a bilateral spasm of the retinal vessels, which extends to the cerebral vessels. One can eliminate these vascular spasms by the injection of choline, so as to be able to study the effects of the embolism alone.

Hillemand reported a case of jacksonian epilepsy ending fatally following exploratory puncture.

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Dr. Harvier Elected Professor of Therapeutics

Dr. Harvier, until recently associate professor of therapeutics at the Faculté de médecine, has been named professor to succeed Professor Loeper, who has been elected to the chair of clinical medicine.

BERLIN

(From Our Regular Correspondent)

July 1, 1935.

Secondary Effects Following the Use of Amidopyrine

In a recent address before the Berlin Medical Society, Professor Dennig spoke on the secondary effects following the use of amidopyrine and related drugs, a subject much discussed in various countries, especially in connection with the appearance of agranulocytosis following the ingestion of amidopyrine. Usually it is a question of relatively harmless idiosyncrasies; but a form of idiosyncrasy that leads to agranulocytosis may take a fatal course. Hence, in manifestations of angina, under which picture an agranulocytosis first presents itself clinically, patients should be warned against the use of amidopyrine and related drugs; likewise in mild disorders in which medicines are not needed. On the other hand, Dennig and other clinicians have not observed these injuries following the application of large doses of amidopyrine (even of several grams) in articular rheumatism.

Prof. Werner Schultz, who was one of the first to describe the disease termed "agranulocytosis," stated during the discussion that he had not observed such connections. The incidence of agranulocytosis is far from uniform. In Denmark it appears to be common. In any event, in cases of agranulocytosis all preparations should be omitted that contain amidopyrine in any form, since they effect a marked exacerbation of the disease. Professor Schittenhelm pointed out that a diminution of leukocytes, such as occurs in agranulocytosis, may be produced not only by amidopyrine but also by salicylic acid, cinchophen and other substances.

Meeting of Microbiologists

The May session of the Deutsche Vereinigung für Mikrobiologie opened with commemorative exercises for Robert Koch. The first topic, "Diphtheria," was introduced by Schlossberger of the federal bureau of health, who discussed the new division of diphtheria bacilli, according to definite cultural characteristics, into the three types "gravis," "mitis" and "intermedius," a division which appears to be acceptable, whereas an immunologic division of the various stocks is not so useful. Gundel of Berlin emphasized the importance of the three types in epidemiology and termed the distribution of diphtheria bacilli as "practically ubiquitous." In diphtheria outbreaks one may speak of a quantitatively graduated contamination of one's environment. What causes diphtheria to appear and to disappear is not perfectly understood.

Kleinschmidt emphasized the great difference in the aspects of the disease and spoke of a pathomorphosis, since now there is much more pharyngeal than laryngeal diphtheria, which is just the opposite of formerly. Toxic diphtheria is for a time rare and then for a time frequent. In specific therapy one must bear in mind that normal horse serum always contains a few units of antitoxin. Death may intervene, however, in spite of maximal serum doses of from 100,000 to 500,000 units. But every physician is morally obligated to use the serum. Intravenous injections of serum are best given in a clinic. Clauberg brought out that in diphtheria one must count on a third of the population as bacillus carriers; it is useless therefore to isolate those who happen to come down with the disease.

Several unofficial papers were presented. According to Uhlenhuth and Zimmermann, Weil's disease may be transmitted even by the bite of tame rats. This disease may resemble meningitis without icterus. Schüffner of Amsterdam reported that among 105 cases in the Netherlands seventeen were fatal. The therapeutic serum gave favorable results. Bathing in open waters is the most frequent source of the infection, which was confirmed by observations in the navy.

In the determination of the blood groups, Laubenheimer of Frankfort advised great caution; particularly in the determination of the M and N factors in court trials in which the paternity of a child is involved, since the courts are coming to accept the testimony of experts in this field.

Venereal Disease in Thuringia

According to the federal census of venereal diseases for 1934, there are in Germany every year 34.6 new infections with venereal disease to each 10,000 inhabitants; in Thuringia there are 32.2 new cases, Dr. W. Schultze stated in an address before the Medical Society of Jena. In the reich, from 1927 to 1934, the number of new infections dropped from 58.5 to 34.6 per 10,000 of population; in Thuringia, during the same period, there was a decline from 39.9 to 32.3. The most common venereal disease is gonorrhea (78 per cent), while soft chancre with only 0.5 per cent plays but a small part. Congenital syphilis has decreased one half. In Thuringia, which comprises a part of "central Germany," one has to count on 1,400 new cases of syphilis and 4,200 new cases of gonorrhea each year. The principal center for the detection and registration of venereal patients is a consultation center at the Landesversicherungsanstalt in Weimar, the capital of Thuringia. A working merger with the krankenkassen has been established, so that the cost of treating infectious patients is regulated on a large scale. In cities in which brothels still exist the morbidity figures are higher than elsewhere. The cost in

caring for prostitutes who were ill for some individuals reached as high as 2,750 marks ($1,100) in a single year. In October 1934 a special department for asocial female venereal patients was established, which is under the control of the University Dermatologic Clinic in Jena. As asocial are designated such persons as have promiscuous intercourse and thus expose themselves to infection, venereal patients who have recurrences continually, and patients who refuse to be classed as members of any recognized working body. To this group belong all venereal patients who manifest indolent or criminal tendencies. In this special department patients become accustomed to a regular mode of living; they are obliged to work and have a definite daily schedule for labor and rest. A similar department for asocial male venereal patients is to be created. If these patients show that they have actually changed their attitude toward life and desire to secure permanent work, a carefully chosen opening is provided in which they must voluntarily submit to a special form of supervision. Patients with mental defects are placed in corresponding institutions. Asocial patients who show no signs of regeneration or social improvement are retained in "closed" institutions.

Malignant Tumors of the Mouth

Professor Lindemann, who is the director of the large West German clinic in Düsseldorf, where the treatment of diseases of the jaws is a specialty, has made a careful study of more than 200 cases of carcinoma and sarcoma. The results of a radical surgical treatment of these malignant tumors have improved greatly, chiefly owing to a better knowledge of the early symptoms and to refinements in the surgical accomplishments as regards radical excisions of tumors, and because of the great advances in plastic surgery as applied to large defects of the face. The ability to avoid postoperative disturbances through the progress in local and regional anesthesia has been a great advantage. According to the experiences of Lindemann, an irradiation effects frequently a reduction in the size of such a tumor, so that a radical excision becomes possible. Another important question is as to whether an ulcerated tumor or a tumor that has led to regional metastases should be irradiated. Professor Schreus stated that the radiologic treatment will vary widely, depending on the site and the degree of extension to the deep-lying tissues, for which adequate methods have been worked out. In accordance with the special indications, the specialist will apply fractioned irradiation with short intervals, contact treatment with application of radium, radium needle treatment, and irradiation by the Coutard method in the form of percutaneous therapy. Schreus has an increasing preference for radium treatment within the tumor, particularly in glandular metastases. In suitable cases the radial application of radium needles to the tumor is recommended. Some patients who were irradiated several years ago are still alive. If recurrences are to take place after unsuccessful irradiations, they usually appear promptly. From the experiences of Schreus, irradiation appears to be the preferred method in carcinoma of the upper jaw; also in lingual and in pharyngeal tumors.

Sixtieth Birthday of Professor Sauerbruch

Prof. Ferdinand Sauerbruch, the directing surgeon of the Berlin University Surgical Clinic, celebrated his sixtieth birthday, July 3. In the beginning of his career he served as assistant to Langerhans. In Breslau, under Mikulicz, his reputation became established. After serving in the university clinics of Greifswald and Marburg, he was offered in 1910 a chair in the University of Zurich. In 1918 he accepted a call to the University of Munich, and in 1928 to the University of Berlin. His reputation was now great enough to take a position alongside August Bier. The subpressure procedure introduced by him makes it possible to open the thoracic cavity without collapse of the lung, which is under negative pressure. This procedure enables the operator to undertake extensive operations on the lungs, which denotes a distinct advance. Since then Sauerbruch has worked out this procedure more in detail, introducing many improvements. During the World War he invented a movable prosthesis for persons with amputated limbs. The idea was to utilize the movable muscles of the stump for the control of the prosthesis. Sauerbruch has carried on researches on surgery of the pericardium, the heart and the large blood vessels of the thorax, and on thoracoplasty. His researches on diet in tuberculosis are well known. He is the editor or collaborator of some of the most important textbooks on surgery. As a teacher he charms by his enthusiastic presentation. His lectures, which he often delivers in foreign countries, are noteworthy presentations of surgical doctrine.

BELGIUM

(From Our Regular Correspondent)

July 17, 1935.

Supervision of Adolescents in Industry

Dr. Langelez, "inspector general" of the Service médical du travail, has an article in the *Revue du travail* on the sanitary supervision of adolescents. In 1920 the work begun by Dr. Glibert in this field was sanctioned by a royal decree. Dr. Langelez, who for a number of years has been in a position to observe how the prescribed measures are applied and what results are secured, gives a summary of his observations.

The sanitary supervision of adolescents in industry, as organized in Belgium, is designed to render to the adolescent man power in our industrial plants constant service. In guiding youth's first step in the industrial life, in aiding young persons in the choice of a means of livelihood and in their adaptation to the trades, in supervising their first years of industrial activity, in watching over the less alert and in discovering at the start disturbances of health, this organization deserves a special place among the movements whose avowed task is the protection of workers. As Dr. Glibert said one day, "What finer service can physicians render than to watch over the normal development and the physical growth of the future generation of producers of wealth?"

To say that the organization as it exists is perfect would be an error. But does it reach all those that it is designed to aid; namely, boys and girls from 14 to 18 years of age in all industries except that of the home and the exploitation of agricultural work? One may reply that the organization functions efficiently in the major industries, in the middle-sized industries, and in a large portion of the minor industries. Its principles are the most difficult to apply in the minor industries in which there are only one or two apprentices; but in the trades presenting appreciable dangers the health of adolescents is periodically observed.

"Are the medical examinations made with sufficient care?" "Is there, in the organization of this service, nothing mechanical in the administration and in the paper work?" In reply to these questions, it should be said that sanitary supervision is as all other human endeavors. The better the physician, the better the work is done that is entrusted to him, whether it is a question of industrial medicine, inspection of schools, consultations for nurslings or antituberculosis dispensaries. There are, however, certain organizations that are practically perfect, in which the physicians perform their tasks with the zeal and conscience of an apostle. Men of their caliber understand that the medicine of today demands more than formulas for treatment and prescriptions of drugs. The physician of the future must not devote his entire attention to therapeutics but must take on new activities born of modern hygiene and of preventive medicine. The protection of childhood, the medical surveillance of school children, and the sanitary supervision of adolescents in industry are movements the social value of which is apparent

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to every one; but their value in an individual case depends on the type of physician that administers them.

In one sense, the sanitary supervision of adolescents is only a continuation of the guardianship to which school children in Belgium are subject. The mode of functioning of the service may be summarized as follows: examination one month after the new work is begun; an annual general survey of adolescents with supplementary examinations after one month, three months or six months. The examinations are given either by the medical inspectors of the ministry of health or by physicians selected by the industrial heads.

Diphtheria Carriers in Children's Colonies

In the children's colonies it has become customary to examine the whole group to discover carriers of diphtheria bacilli. In the Dongelberg colony, during 1931 and 1932, Nélis searched for the Loeffler bacillus in 1,779 children. He discovered it in thirty-five cases, or 2 per cent. In the Wesembeck colony, twenty-four germ carriers were discovered in a group of 548 children (4.4 per cent); in the Cortil colony, five in a group of 175 (3 per cent); at the Jaspar Institute, six in a group of 109; at the Ecole d'Evere, one in a group of ninety-one, or seventy-one carriers of diphtheria bacilli (2.6 per cent) in the 2,702 children examined.

While the elimination of carriers improves the sanitary situation, one must not count too much on this method; for, between the arrival of a new contingent and the time when the results of the bacteriologic examinations become known, several days elapse, during which the carriers disseminate bacilli. Furthermore, in some subjects the presence of pathogenic organisms in the throat is intermittent. Then again, isolation of carriers is not practicable in these colonies.

The measure that is most effective is vaccination with anatoxin. Nélis considered that in the colonies that receive the whole contingent on a fixed date it is preferable to vaccinate all the children at the start, without applying first the Schick test to eliminate those with a negative reaction. In the colonies that receive children continually, one should either vaccinate every six months the children with a positive Schick reaction or vaccinate the children at once as they arrive.

Should the children be vaccinated in case of an epidemic? It is advisable to administer first an injection of anatoxin, to follow it up immediately with an injection of preventive serum, and later to return to vaccination.

Maritime Medical Aid

The story of the organization of maritime medical aid by means of the radio, as a result of the initiative taken in Belgium by Dr. Bernard, is well known. Dr. Bernard, in collaboration with Dr. Haeck, has just published an interesting monograph on the subject. The International Radiomedical Service, with its ninety-three equipped stations, is having a world-wide development. One of its principal aids, the Manuel médical international, has been prepared and is expected to appear soon. The authors feel justified in appealing to the nations that have not yet established coastal radiomedical service. This applies to the vast expanses of the South Atlantic, the Indian Ocean and a part of the Pacific.

Likewise, medicine chests should be standardized, as that would contribute greatly to the efficacy of the service. Until such standardization can be effected, all the radiomedical stations should be supplied with a pamphlet giving the composition of the medicine chests of each country.

The program of the service should include also study courses leading up to examinations for "marine officer" and also elementary courses, theoretical and practical, in radio medicine.

Great importance attaches to the creation of a central organization for the establishing of criteria to control radiomedical diagnoses.

BUDAPEST

(From Our Regular Correspondent)

July 3, 1935.

The Eleventh National Medical Congress

The attendance at the eleventh National Medical Congress, held in May at the picturesque resort of Lake Balaton, exceeded all previous records. The program was unusually instructive.

INSUFFICIENCY OF THE CORONARY CIRCULATION

Prof. Arthur Hasenfeld said that insufficiency of the coronary circulation is in the foreground among investigators of cardiac disease. He emphasized that the increase in heart lesions is due to disorders of the coronary arteries. These can be prevented and in many instances cured. He strongly condemns attempts to cure angina pectoris by surgical operations. He never had a patient with angina operated on, nor will he ever operate for this condition. He is of the opinion that such methods are dangerous and unjustified. The preservation of the coronary arteries is one of the most important requirements for longevity. Sparing the heart means at the same time sparing the coronary arteries and is best insured by adequate rest after work, annual vacations of a fortnight or two, and reasonable bathing, if possible in water containing carbon dioxide.

NEW DOCTRINES IN THE STUDY OF TUBERCULOSIS

Prof. Johann Angyán expressed the opinion that the sanatorium system of treatment of tuberculosis gave unsatisfactory results. In the postwar years valuable data were accumulated, mainly as the result of the development of artificial pneumothorax and of serial roentgenograms. Tuberculosis affects the whole duration of life in cycles. The character of the disease varies in different periods of life. This cyclic course is attributable to the fact that people are usually infected prior to their tenth year of life; consequently the campaign against tuberculosis in infancy is of the greatest importance. In this field much can be expected from the social service system. But simply making the campaign one of housing, clothing and feeding leads to dependence on the daily trend of politics, and the campaign against tuberculosis should be free from politics. The chief endeavor of the campaign should be to remove the children from the sphere of grown-ups who are infected. Therefore the work of asylums should be directed toward serving these child groups, placing children in healthy homes. In the children's sanatoriums, the number of which is relatively small, in place of convalescent and holiday measures tuberculous children should be cured.

THE PREVENTION OF CANCER

Endre Kubanyi stated that the strides made in the last decade have definitely demolished the false dogma that no scientific knowledge exists regarding the etiology of cancer. In the origin of cancer there are two factors to be reckoned with. One is the local stimulus, which incites the cells to propagation, in most cases without any cause; the other is the individual tendency, whereby the cell propagation caused by external stimuli passes into a cancerous growth. The individual predisposition is inheritable. The cancer of workers dealing with aniline, arsenic or tar corroborates the statement that already there are known causative agents. The therapeutic achievements of the last three decades established that cancer in its initial stage is curable. Hungary, and chiefly its capital, Budapest, despite its financial difficulties, will shortly extend all branches of research to achieve the utmost in this field. The Swedish, English, American, French and Belgian anticancer movements show that curing cancer is, in a great measure, a question of financing and organization. While discovery of the etiology of cancer is a scientific question, the prevention of cancer is a problem of organization.

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ITALY

(From Our Regular Correspondent)

June 30, 1935.

Chronic Appendicitis

Under the chairmanship of Professor Donati of the University of Milan, the Società medicochirurgica lombarda held a session devoted entirely to chronic appendicitis. According to Ferrata, chronic appendicitis from the start follows its clinical course uninfluenced by acute, subacute or recurrent appendicitis. He regards chronic appendicitis as an inflammatory disturbance of Peyer's patches and the enclosed follicles. Constitutional factors play a large part in its causation. Ferrata expressed the view that medical treatment is not effective and that the problem is essentially surgical.

Maiocchi gave statistical data on 1,600 appendicectomies performed in the Ospedale Maggiore in Milan. He believes in the existence of chronic appendicitis from the start, but he regards it as a rare type (about 6 per cent). Timely intervention avoids the necessity of making changes in the other abdominal organs, particularly the stomach and the gallbladder.

Perussia, radiologist, discussed the value of roentgenologic symptoms of chronic appendicitis, none of which are pathognomonic.

Castiglione demonstrated the existence of those forms of appendicular disease which sometimes are induced by changes in the elastic and the nervous tissues. Clinically important are the disturbances that may simulate changes in the urinary apparatus and make one suspect the existence of an appendiculo-urinary reflex. It is necessary, he emphasized, to distinguish carefully the syndrome of appendicular disease from numerous other syndromes that might lead to useless appendicectomies.

Solaro, in 1,300 operations for appendicitis in fourteen years, found chronic appendicitis in 40 per cent. Only in 21 per cent of these were the lesions confined to the appendix so that appendicectomy constituted an adequate intervention. In the majority of cases, the lesions of the appendix were associated with symptoms of perivisceritis of the right side; hence the need of adhering to ample incisions sufficient to explore not only the appendix but also all the organs of the right half of the abdomen.

Zaccardi and Mucchi discussed the diagnostic difficulties that arise in connection with chronic inflammatory tumors of appendicular origin, especially in differential diagnosis as against a neoplasm of the ascending cecum.

Ettorre considered the diarrheic type of chronic appendicitis —a clinical form little known, which differs from the ordinary picture in that attacks of diarrhea alternate with periods of regular functioning, without any evident symptoms involving the appendix.

Analgesia and Anesthesia

A new society, the Società italiana di chirurgia e anestesia, has been founded in Rome. At the first session Prof. Roberto Alessandri, clinical surgeon, spoke on the more extensive use of local anesthesia, together with the preparation of patients by means of basal anesthesia. Local anesthesia has great merit and constitutes an ideal method, owing to the absence of harmful effects on the organism. Its greatest disadvantage is the incomplete character of the analgesia. The basal anesthesia strengthens its action and makes the patient more sensitive to the drug used locally. Scopolamine dilaudid (a combination of hydromorphinone and scopolamine) is an optimal substance for basal anesthesia. Alessandri has used this preparation in a large number of cases for grave interventions, mostly cases of gastric surgery, such as resection for ulcer and cancer, and thoracoplastic surgery. He thinks that the custom of combining basal anesthesia with local anesthesia will be more widely adopted by surgeons.

Professor Testoni spoke on his direct experiments to determine the mechanism of vomiting due to chloroform. He excludes the gastric mucosa as the starting point of the vomiting reflex. Chloroform is not eliminated through the stomach, as occurs in the case of other indirect emetics, and Testoni holds that the anesthetic acts principally by exciting directly the bulbar center that controls vomiting. He does not, however, deny that vomiting due to chloroform may be also of reflex origin; in that case the starting point of the reflexes would have its seat not in the gastric mucosa but in other reflexogenic areas, the most important of which are the heart and the sinus caroticus.

Blood Transfusion

The public health service has brought to the attention of the prefects a decree of the minister of the interior outlining the norms pertaining to blood transfusion and to the use of human blood serum. The preparation for curative and prophylactic purposes of serums derived from persons convalescent (or cured) from poliomyelitis, measles, scarlet fever or other infective diseases will be subject to surveillance according to the norms established for serums and vaccines of animal origin. The collection of human blood and the preparation of serum may be carried out only at special collection centers or at institutes authorized by the minister of the interior. Blood donors for the preparation of serums must be at least 10 years old, of a sound constitutional type, and free from infectious diseases in general, particularly syphilis, tuberculosis and malaria.

Blood donors for blood transfusion must be found suitable as a result of rigorous clinical and laboratory examinations and must belong to a blood group compatible with that of the recipient.

The bureau of health in each commune shall keep a list of the voluntary and professional blood donors. They shall be provided with a special record card showing the blood group to which they belong, and they must subject themselves to a control examination at least every three months.

A physician who intends to give a blood transfusion must prefer his request for a donor to the communal health officer. In case of urgent need he may make use of a donor who appears suitable even though not enrolled in the communal register.

The formation of an association of blood donors, under the supervision of the sanitary authorities, is authorized.

Marriages

BRUCE NEWCOMER WOLFF, Gettysburg, Pa., to Miss Dorothy Burg Seiple, at Boiling Springs, Pa., June 8.

HARRY EARL PFEIFFER to Miss Edlee May Robinson, both of Cedar Rapids, Iowa, in Chicago, June 29.

GEORGE W. SIPPOLA, Detroit, to Miss Gladys H. H. Niemi of Riverside, Ont., Canada, June 6.

JOHN W. HOUK, Cleveland, to Miss Mary Hammond O'Brien of New Haven, Conn., July 27.

S. MILES BOUTON JR., Sykesville, Md., to Miss Martha Turnquist of Chicago, July 24.

HENRY F. CARMAN JR., Butte, Mont., to Miss Margaret E. Smith of Chicago, June 25.

JOHN ROBERT ANDREWS, Cleveland, to Miss Anne Cosgrove, at Philadelphia, June 15.

ROBERT B. WALKER to Miss Helen Grace Young, both of Philadelphia, June 8.

HAROLD O. GARDNER, Waterloo, Iowa, to Miss Vera Bittle of Lisbon, July 9.

LESTER L. LONG to Miss Esther May Payne, both of Seattle, June 29.

HARRY MEYER to Miss Marion Hirsch, both of New Orleans, June 11.

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Deaths

Edwin Raymond Le Count ⊕ professor of pathology in Rush Medical College since 1892, died in Chicago at the Presbyterian Hospital August 23 of coronary thrombosis. Dr. Le Count was born in Wisconsin, April 1, 1868. After graduation from Carroll College he attended Rush Medical College and received his M.D. degree in 1892. Thereafter he pursued graduate studies in Johns Hopkins Hospital in 1893 and 1894, in the Pasteur Institute in Paris in 1896 and in Berlin in 1905. He served at various times as attending pathologist in the Cook County, Presbyterian and St. Luke's hospitals and also at St. Elizabeth's and St. Anthony's hospitals. He was a member and once president of the American Association of Pathologists and Bacteriologists and was a president of the Association for Cancer Research. He was also a member of the American Association for the Advancement of Science and of the Society of American Bacteriologists. In the American Medical Association he served as a member of the House of Delegates in 1903 and as chairman of the Section on Pathology and Physiology from 1920 to 1921. He was the author of numerous contributions to the literature of his specialty, particularly on such subjects as the relative frequency of the various forms of coma, automobile injuries, skull fractures, air and fat embolism and blastomycosis. In his long service as pathologist to so many institutions he performed approximately 20,000 postmortem examinations. He was noted particularly for his training of young men in pathology, and many of the younger leaders in this field today were associated at various times with him. At the time of his death he had completed postmortem records extending over a period of twenty-five years, completely indexed and annotated, and presented these as a permanent contribution to the library of Rush Medical College.

EDWIN RAYMOND LE COUNT
1868-1935

Otto L. Schmidt ⊕ an educator, a medical historian of considerable note, a sportsman, and a beloved family physician, died in Chicago, August 20, of carcinoma of the prostate with metastasis, aged 72. Dr. Schmidt was the son of a physician, Dr. E. S. Schmidt. He received his M.D. degree from the Chicago Medical College in 1883 and after postgraduate work abroad took up the practice of medicine in Chicago. He was a consultant to the Alexian Brothers Hospital and a member of the staff of other Chicago institutions. From 1915 to 1919 he served as chairman of the Illinois Centennial Commission. He was a past president of the Institute of Medicine in Chicago, the Illinois Historical Society, the Illinois Historical Library and the Chicago Historical Society. He was also president of the Inland Lake Yachting Association. Dr. Schmidt served as a member of the Board of Education of the City of Chicago during the Dever administration and took a prominent part in maintaining the ideals of education during the attacks on Superintendent of Schools William McAndrew. He was decorated by the Austrian government in 1923 for postwar relief work. His two daughters are wives of physicians.

George Gregory Carroll ⊕ Rochester, N. Y.; University of Pennsylvania Department of Medicine, Philadelphia, 1900; member of the American Academy of Ophthalmology and Oto-Laryngology, the American Laryngological, Rhinological and Otological Society and the American Bronchoscopic Society; fellow of the American College of Surgeons; aged 61; on the staffs of the Genesee Hospital, Monroe County Hospital, St. Mary's Hospital, St. Mary's Boys Orphan Asylum and the Park Avenue Hospital, where he died, July 23, of heart disease and diabetes mellitus.

William L. Callaway, Chicago; Barnes Medical College, St. Louis, 1897; member of the Illinois State Medical Society; formerly professor of clinical medicine, Chicago College of Medicine and Surgery, Bennett Medical College and Loyola University School of Medicine; on the staff of the West Side Hospital; aged 65; died, July 24, of angina pectoris.

Martha Jane Bledsoe, Chickasha, Okla.; Keokuk Medical College, College of Physicians and Surgeons, Keokuk, Iowa, 1906; member of the Oklahoma State Medical Association; past president and secretary of the Grady County Medical Society; formerly on the staff of the Chickasha Hospital; aged 72; died, July 3, of chronic myocarditis.

Henry Bierman ⊕ Bloomsburg, Pa.; Hahnemann Medical College and Hospital of Philadelphia, 1888; past president of the Columbia County Medical Society; served during the World War; on the staff of the Bloomsburg Hospital; aged 70; died, July 22, in the Geisinger Hospital, Danville, of carcinoma of the sigmoid with metastasis to the liver.

William Mack Elliott, Lancaster, Ky.; Kentucky School of Medicine, Louisville, 1896; member of the Kentucky State Medical Association; city judge; formerly superintendent of the Central State Hospital, Lakeland and the Western State Hospital, Hopkinsville; aged 61; died, June 29, of diabetes mellitus and cerebral hemorrhage.

George Parker Holden, Yonkers, N. Y.; New York Homeopathic Medical College and Hospital, 1894; member of the Medical Society of the State of New York; fellow of the American College of Surgeons; aged 65; on the staff of the Yonkers General Hospital, where he died, July 15, of cerebral hemorrhage.

Luther Samuel Hirt, Brazil, Ind.; University and Bellevue Hospital Medical College, New York, 1899; member of the Indiana State Medical Association; past president of the Clay County Medical Society; on the staff of the Clay County Hospital; aged 60; died, July 31, of carcinoma of the lung.

Oscar Raoul Talon L'Esperance ⊕ Boston; Boston University School of Medicine, 1909; member of the American Urological Association; assistant urologist to the Massachusetts General Hospital, 1925-1928; aged 56; died, July 15, at his home in Centerville, of acute dilatation of the heart.

Andrew Crozier Cameron, Birmingham, Ala.; University of Pennsylvania Department of Medicine, Philadelphia, 1904; member of the Medical Association of the State of Alabama; on the staff of St. Vincent's Hospital; aged 55; was found dead in bed, June 10, of heart disease.

John Loy Arnold, Harrisburg, Pa.; Jefferson Medical College of Philadelphia, 1911; member of the Medical Society of the State of Pennsylvania; served during the World War; aged 47; on the staff of the Harrisburg Hospital, where he died, July 26, of coronary thrombosis.

Andrew J. Brislen ⊕ Chicago; Northwestern University Medical School, Chicago, 1895; at one time instructor in anatomy at his alma mater; on the staff of the Woodlawn Hospital; aged 61; died, July 23, in the Albert Merritt Billings Hospital, of cerebral thrombosis.

William Jones Thomas ⊕ Ravenna, Ohio; Western Reserve University Medical Department, Cleveland, 1898; past president of the Portage County Medical Society; aged 65; on the staff of the Robinson Memorial Hospital, where he died, June 24, of Banti's disease.

Anthony Joseph Caffrey ⊕ Milwaukee; Baltimore Medical College, 1898; formerly assistant professor of medicine, Marquette University School of Medicine; on the staffs of St. Joseph's Hospital and St. Anthony's Hospital; aged 64; died, July 11, of cerebral hemorrhage.

George A. Macdiarmid ⊕ New Orleans; Victoria University Medical Department, Coburg, Ont., Canada, 1886; formerly bank president; aged 71; died, June 29, in the Baptist Hospital, of a fracture of the neck of the femur and traumatic ileus, following a fall.

Perry Engle, Newton, Iowa; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1871; member of the Iowa State Medical Society; formerly member of the state legislature; aged 91; died, June 29, of Ludwig's angina.

Samuel Thomas Blades ⊕ Salina, Kan.; University Medical College of Kansas City, Mo., 1903; past president of the Saline County Medical Society; on the staff of St. John's Hospital; aged 60; died, May 6, of nephritis and hypertension.

Frank M. Barden, Hamilton, Ohio; Medical College of Ohio, Cincinnati, 1890; past president of the Butler County Medical Society; on the staffs of the Fort Hamilton and Mercy hospitals; aged 70; died, July 25, of carcinoma of the lung.

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Julian Augustine Chase ✠ Pawtucket, R. I.; Harvard University Medical School, Boston, 1872; past president of the Rhode Island Medical Society; on the staff of the Memorial Hospital; aged 86; died, August 12, of chronic myocarditis.

Emanuel de Marnay Baruch ✠ New York; College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1889; aged 64; died, July 1, at his summer home in Valhalla, N. Y., of cerebral hemorrhage.

Richard Franklin Hinman ✠ Chicago; Bennett Medical College, Chicago, 1912; on the staffs of the Garfield Park Hospital and the Frances Willard Hospital; aged 60; died, July 20, of brain tumor and arteriosclerosis.

Camillus I. Holt, Olton, Texas; Jefferson Medical College of Philadelphia, 1885; member of the State Medical Association of Texas; county health officer; aged 72; died, May 7, in a sanatorium at Plainview, of pneumonia.

William Alonzo Moon, Bellbuckle, Tenn.; University of Tennessee Medical Department, Nashville, 1894; aged 75; died, July 1, in the Protestant Hospital, Nashville, as the result of fracture of the hip, received in a fall.

Joseph R. Beckley, Lebanon, Pa.; University of Pennsylvania Department of Medicine, Philadelphia, 1885; member of the Medical Society of the state of Pennsylvania; aged 75; died, July 3, of coronary thrombosis.

Samuel Bennehoff, Franklin, Pa.; Cleveland College of Physicians and Surgeons, Medical Department of the University of Wooster, 1873; aged 86; died, July 23, of cerebral hemorrhage and pneumonia.

Eugene Thompson, East St. Louis, Ill.; Missouri Medical College, St. Louis, 1890; member of the Illinois State Medical Society; served during the World War; aged 70; died, June 19, of cerebral hemorrhage.

George Russell Thompson, Luzerne, N. Y.; Eclectic Medical College of the City of New York, 1896; health officer and school physician; aged 60; died, May 14, of chronic nephritis and endocarditis.

Frank Harlan Frederick, Pittsburgh; Western Pennsylvania Medical College, Pittsburgh, 1897; member of the Medical Society of the State of Pennsylvania; aged 65; died, June 21, of coronary occlusion.

John Locke Churchill, Halifax, N. S., Canada; McGill University Faculty of Medicine, Montreal, Que., 1896; superintendent of the Nova Scotia Hospital; aged 63; was found dead in bed, June 22.

Russell William Kapp ✠ San Jose, Calif.; Hahnemann Medical College and Hospital of Philadelphia, 1925; aged 35; died, May 5, of rupture of the right ventricle and fatty degeneration of the heart.

William Daniel Webb, St. Joseph, Mo.; Ensworth Medical College, St. Joseph, 1909; member of the Missouri State Medical Association; aged 59; died, May 8, of chronic rheumatic heart disease.

Clarence S. Bates, Lumberport, W. Va.; Baltimore University School of Medicine, 1904; member of the West Virginia State Medical Association; aged 60; died, June 9, of coronary occlusion.

Irwin Carson Carlisle, West Dover, Ohio; University of Wooster Medical Department, Cleveland, 1875; member of the West Virginia State Medical Association; aged 82; died, June 22, of heart disease.

Charles Francis McCarthy, Point Loma, Calif.; University of California Medical Department, San Francisco, 1893; aged 68; died, June 27, of duodenal ulcer, arteriosclerosis and coronary sclerosis.

George McKenzie, Concord, Calif.; University of Toronto (Ont.) Faculty of Medicine, 1891; aged 72; died, May 17, in the Merritt Hospital, Oakland, of myocarditis, chronic nephritis and prostatitis.

John A. Richardson ✠ Seymour, Texas; Memphis (Tenn.) Hospital Medical College, 1892; past president of the Baylor County Medical Society; aged 67; died, May 29, of cerebral thrombosis.

Clark Samuel Long ✠ Lansdale, Pa.; University of Maryland School of Medicine, Baltimore, 1916; for many years member of the school board; aged 47; died, July 17, of coronary thrombosis.

Lacy Newton Conoly ✠ Camden, N. J.; Jefferson Medical College of Philadelphia, 1919; aged 43; on the staff of the Cooper Hospital, where he died, July 9, of essential hypertension.

Albert E. Mieding ✠ Milwaukee; Milwaukee Medical College, 1906; aged 69; died, July 23, at Three Lakes, Wis., of a fractured neck, received when he dived into shallow water.

Harvey Lee Tadlock, Holt, Mo.; Ensworth Medical College, St. Joseph, 1903; aged 65; died, June 13, of undulant fever, nephritis, angina pectoris, arteriosclerosis and hypertension.

Lewis Munthe Berg ✠ Chicago; Tulane University of Louisiana Medical Department, New Orleans, 1890; aged 79; died, July 31, of chronic myocarditis and arteriosclerosis.

Robert Lewis Hill Jr., Santa Paula, Calif.; Hahnemann Hospital College of San Francisco, 1895; aged 63; died, May 30, of chronic nephritis, arteriosclerosis and myocarditis.

Joseph Sesansky ✠ Buffalo; Long Island College Hospital, Brooklyn, 1915; on the staff of the Memorial Hospital; aged 40; died, July 15, in the Buffalo General Hospital.

Raymond O. Hathaway, Monroe, Mich.; Detroit College of Medicine and Surgery, 1913; on the staff of the Monroe Hospital; aged 46; died, July 15, of erysipelas.

Darius Burtch, Watsonville, Calif.; College of Physicians and Surgeons, Keokuk, Iowa, 1884; aged 73; died, June 19, of valvular heart disease and chronic myocarditis.

William H. Stoakes, Albion, Neb.; State University of Iowa College of Homeopathic Medicine, Iowa City, 1901; aged 80; died, June 28, of senile dementia.

George Robert Fellows, Seabrook, N. H.; Druidic University of Maine, Lewiston, 1886; aged 86; died, June 20, at Lake Mary, Fla., of cerebral hemorrhage.

Joseph Borak ✠ Brooklyn; University and Bellevue Hospital Medical College, New York, 1925; aged 35; died, July 20, when he was struck by lightning.

Jacob Harper Bain ✠ New Concord, Ohio; Ohio Medical University, Columbus, 1902; aged 58; died, June 12, of coronary thrombosis and arteriosclerosis.

George Ray Hill, Charter Oak, Iowa; Homeopathic Medical College of Missouri, St. Louis, 1904; aged 58; died, May 23, of streptococcic pneumonia.

Winfield Murray Bishop, Baltimore; Temple University School of Medicine, Philadelphia, 1923; aged 41; died, June 17, of myocardial insufficiency.

George Duling Carter, Anthony, N. M.; Barnes Medical College, St. Louis, 1898; aged 61; died, July 4, of angina pectoris and arteriosclerosis.

Alphonse Leon Beardslee, Chicago; State University of Iowa College of Medicine, Iowa City, 1918; aged 41; died, May 5, of lobar pneumonia.

William Warnock Bailey ✠ Davenport, Iowa; Marion-Sims College of Medicine, St. Louis, 1897; aged 69; died, August 6, of myocarditis.

Frank Monroe Cain, Pittsburgh; Jefferson Medical College of Philadelphia, 1889; aged 73; died, June 23, of coronary occlusion and arteriosclerosis.

James Irvin Allen, Oshkosh, Neb.; College of Physicians and Surgeons, Keokuk, Iowa, 1890; aged 72; died, July 4, of perforated gastric ulcer.

Peter Phelps Collins, Denver; Chicago Homeopathic Medical College, 1895; aged 62; died, June 19, in St. Luke's Hospital, of pneumonia.

Fred Flanagan Gremore, Saranac Lake, N. Y.; Albany (N. Y.) Medical College, 1905; aged 53; died, May 7, of Huntington's chorea.

John Logue, Red Rock, N. Y.; University of the City of New York Medical Department, 1889; aged 70; died, May 16, of chronic nephritis.

Benson T. Allen, Minneapolis; Eclectic Medical Institute, Cincinnati, 1885; aged 81; died, May 19, of arteriosclerosis and hypertension.

Charles P. Harwood, Havana, Cuba; University of Louisville (Ky.) Medical Department, 1894; aged 62; died, July 6, of tuberculosis.

James Ernest Bond, Toronto, Ont., Canada; University of Toronto Faculty of Medicine, 1914; aged 46; died, June 12, of pneumonia.

John Horace Burnett, Fostoria, Ohio; Eclectic Medical Institute, Cincinnati, 1881; aged 79; died, June 26, of arteriosclerosis.

John M. Sherman, Long Beach, Calif.; College of Physicians and Surgeons, Keokuk, Iowa, 1880; aged 84; died, June 20.

James Burris Mahony, New York; Rush Medical College, Chicago, 1901; aged 58; died, June 24, of heart disease.

Andrew Goetz Ludwig, St. Catharines, Ont., Canada; Trinity Medical College, Toronto, 1897; aged 62; died, May 25.

J. L. Allison, Rochester, Ind. (licensed in Indiana in 1903); aged 75; died, June 17, in Brookston, of angina pectoris.

Bureau of Investigation

MISBRANDED "PATENT MEDICINES"

Abstracts of Notices of Judgment Issued by the Food and Drug Administration of the United States Department of Agriculture

[EDITORIAL NOTE: The abstracts that follow are given in the briefest possible form: (1) the name of the product; (2) the name of the manufacturer, shipper or consigner; (3) the composition; (4) the type of nostrum; (5) the reason for the charge of misbranding and (6) the date of issuance of the Notice of Judgment—which may be considerably later than the date of the seizure of the product.]

Menno.—Scientific Mfg. Co., Scranton, Pa. Composition: Plant drug extracts including a laxative drug, glycerin, small amounts of baking soda and magnesium carbonate, and a trace of ipecac alkaloids, with alcohol and water. For indigestion, ptomaine poisoning, etc. Fraudulent therapeutic claims.—[*N. J. 22304; November, 1934.*]

Puton.—Composition: Essentially a lead soap, rosin and camphor. For all kinds of sores (except cancers). Misbranded because statement, "Guaranteed under the Food and Drugs Act, June 30, 1906," gave the mistaken impression that the stuff had been examined and approved by the government, whereas it had not; fraudulent therapeutic claims.—[*N. J. 22306; November, 1934.*]

H. Haehle's Volcanic Earth.—Mene L. de Freese, La Mesa, Calif. Composition: Finely powdered iron, calcium and aluminum silicate. For catarrh, diphtheria, whooping cough, diarrhea, headache, insomnia, skin disorders, etc. Fraudulent therapeutic claims.—[*N. J. 22307; November, 1934.*]

Mi-Cro-Line Bladder and Kidney Remedy.—Microline Medicine Co., Dallas, Texas. Composition: Essentially volatile oils including eucalyptus, a fatty oil and benzoic acid. Fraudulent therapeutic claims.—[*N. J. 22308; November, 1934.*]

Eucaline Tonic Compound.—Eucaline Medicine Co., Dallas, Texas. Composition: Essentially cinchona alkaloids (quinidine and cinchonidine), acetanilid (2.7 grains per fluid ounce), with oil of peppermint, alcohol, sugar and water. For la grippe, stomach disorders, etc. Fraudulent therapeutic claims.—[*N. J. 22308; November, 1934.*]

Admirine.—Microline Medicine Co., Dallas, Texas. Composition: Essentially Glauber's and epsom salts, iron chloride, potassium iodide (0.5 per cent), extracts of plant drugs and water, flavored with cinnamon oil. For impure blood, debility, malaria, etc. Fraudulent therapeutic claims.—[*N. J. 22308; November, 1934.*]

Thersol.—Thersol Corporation, Detroit. Composition: Essentially a watery solution of calcium, sodium, potassium and magnesium chlorides. For various types of rheumatism, nervous breakdown, high blood pressure, heart flutter, etc. Fraudulent therapeutic claims.—[*N. J. 22309; November, 1934.*]

St. Joseph Moroline Petroleum Jelly.—Plough Sales Corp., Memphis, Tenn. Composition: Petrolatum. Misbranded because contents less than amount declared, also because of fraudulent therapeutic claims as a remedy for wounds, piles, sore throat, coughs, etc.—[*N. J. 22310; November, 1934.*]

Williams' S. L. K. Formula.—Williams Laboratories, Kansas City, Mo. Composition: Essentially plant drug extracts including nux vomica and a laxative, methenamine, pepsin, glycerin, alcohol (2.2 per cent) and water. Misbranded because alcohol content falsely declared and because of fraudulent therapeutic claims as a remedy for liver, kidney and stomach disorders, rheumatism, etc.—[*N. J. 22312; November, 1934.*]

Blue Bell Liniment.—Commercial Laboratories, Inc., Newark, N. Y. Composition: Essentially a petrolatum oil such as kerosene, with small amounts of camphor, oleoresin of red pepper, and the oils of thyme and sassafras. For coughs, sore throat, rheumatism, stomach ache, dyspepsia, colic, stiff joints, etc. Fraudulent therapeutic claims.—[*N. J. 22313; November, 1934.*]

Vio Liquid Antiseptic.—Commercial Laboratories, Inc., Newark, N. Y. Composition: Not stated except that bacteriological examination showed it to be not antiseptic. Fraudulent therapeutic claims.—[*N. J. 22313; November, 1934.*]

King Menthol (King Mentho-Salve).—King Mfg. Co., Ltd., Coudersport, Pa. Composition: Essentially petrolatum, with small amounts of menthol, wintergreen and eucalyptol. For coughs, catarrh, piles, skin eruptions, inflammations, asthma, bronchitis, deafness, eczema, hay fever, pneumonia, rheumatism, ulcers, etc. Fraudulent therapeutic claims.—[*N. J. 22314; November, 1934.*]

Davis Vegetable Nervine.—Devore Mfg. Co., Columbus, Ohio. Composition: Essentially ammonium, sodium, potassium and lithium bromides, plant drug extracts including valerian, sodium benzoate, sugar and water, flavored with lemon oil. Misbranded because representation that it was "entirely vegetable" was false and misleading, and also misbranded because fraudulently represented as an effective treatment for nervous disturbances, hysteria, drunkenness, epilepsy, sciatica, etc.—[*N. J. 22318; November, 1934.*]

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

AGGLUTINATION TESTS BEFORE TRANSFUSION

To the Editor:—After a patient has had a blood transfusion from a donor whose blood has matched, is it safe to give the same donor's blood a second time later without rematching; that is, is the patient likely to develop any incompatibility against a blood that has matched after having received a dose of the blood? If blood has matched and the patient receives blood from other donors in the meantime, is it safe to give blood from the previously matched donor at a later date? If any incompatibilities are likely to develop, how much time elapses before their development and what are the nature and seriousness of the reaction?

RALPH MOSTELLER, M.D., Spartanburg, S. C.

To the Editor:—Some discussion has come up recently in this hospital concerning the typing and cross-matching for transfusions. Do you consider it necessary to recross-match a patient and donor if a repeated transfusion is necessary? Is it necessary to cross-match the patient and donor in a repeated transfusion if the cross-matching was all right originally but if another donor has been used for that patient in the interval? Does the type of the recipient change after one or more transfusions? Do prolonged high temperature, blood stream infections or jaundice affect the type and consequently the cross-matching of the patient's blood with a prospective donor? Can the same donor be used repeatedly for small transfusions, provided not more than 1,000 cc. has been used, without any further cross-matching of patient and donor? Give references if possible. Please omit name.

JAMES W. WALTON, M.D., Middletown, N. Y.

ANSWER.—Whenever the same patient is given more than one transfusion, cross-matching must be repeated before each transfusion, no matter whether it is the same donor that is to be used again or not. This is required because "agglutinins and hemolysins originally absent may have developed against a donor's blood when the donor is used more than once in the transfusion of the same patient" (Thalhimer, William: Hemoglobinuria After a Second Transfusion with the Same Donor, THE JOURNAL, May 14, 1921, p. 1345. Wiener, A. S.: Blood Groups and Blood Transfusion, Springfield, Ill., Charles C. Thomas, 1935, p. 45). Other immune reactions are possible also.

The problems of the development of incompatibilities under the conditions in question have not been studied thoroughly. Based on our knowledge of the production of antibodies under other conditions, it may be assumed that, following transfusion under suitable conditions, antibodies may begin to develop in a few days. The disturbances that may be caused by transfusion when "incompatibilities" have developed as a consequence of previous transfusion may be serious, even fatal; hemolysis and hemoglobinuria may occur and also perhaps reactions of anaphylactic nature.

It would not be advisable to use the same donor repeatedly even for small transfusions without cross-matching before each transfusion.

The group of the blood of the recipient does not change after one or more transfusions, in prolonged high fever in blood infection or in jaundice. In fact, so far as known, the blood group of a person does not change under any circumstances.

GOLD SALTS IN ARTHRITIS

To the Editor:—Please tell me what you know about the gold salts treatment for chronic arthritis as described by Dr. Jacques Forestier at the meeting of the American Academy of Orthopedic Surgeons in the Waldorf-Astoria Hotel in New York. Is it any good? Where can I get in touch with Dr. Forestier? Please omit name.

M.D., New York.

ANSWER.—The address is Dr. Jacques Forestier, Villa Forestier, Avenue d'Alibon, Aix Les Baines, Savoie, France.

The treatment that Dr. Forestier employs is the gold salt treatment, which was originally proposed by Möllgaard of Copenhagen in the treatment of tuberculosis.

There seem to be no American statistics that evaluate the benefit of this preparation. Forestier uses it chiefly in atrophic or rheumatoid arthritis. He uses, in addition, orthopedic treatment such as plaster splints, supports and physical therapy, including baths.

The injections are given weekly for a period of two or three months, which constitutes a series. A series may be repeated. The injections are intramuscular.

The paper read by Forestier in New York before the American Academy of Orthopedic Surgeons was on the early stages of ankylosing spondylitis (Strümpell-Marie's disease).

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Forestier carried out trials in more than 500 cases of rheumatoid arthritis, in which he claims he has had more success with gold salts than with any remedy employed previously. He employs the intramuscular route and states that the gold salts should be given by a skilled nurse. He uses gold sodium thiomalate (containing 50 per cent of gold) in oil suspension. This may be given in weekly injections of from 0.1 to 0.2 Gm. The total amount for one series should be between 1.5 and 2 Gm. Several series should be given successively with intervals of from six to eight weeks.

He states that in more than 500 cases from 70 to 80 per cent responded well to gold therapy. Among these, 50 per cent of recent cases and from 20 to 30 per cent of more than two years' duration have been permanently cured by from two to five series of injections and remained cured with no further treatment for two or three years.

He favors the complementary use of endocrine preparations and physical therapy after the inflammatory process has subsided. Forestier's hypothesis is predicated on the theory that development of rheumatoid arthritis is accompanied by tuberculous infections but that it requires another infective element, such as infected tonsils or teeth, to precipitate it. Gold sodium thiomalate appears to Forestier to be a means of treatment for rheumatoid arthritis, and this condition is amenable to cure in a considerable proportion of early cases.

The reader may be interested in an article by Dr. Forestier entitled "Rheumatoid Arthritis and Its Treatment by Gold Salts" (*Lancet* **2**:646 [Sept. 22] 1934).

It is perhaps significant that Forestier's gold compound also contains sulphur, as the latter is in considerable repute of late in the treatment of arthritis. It would be better, probably, not to give too much consideration to Forestier's treatment until it has had some confirmation. Furthermore, the use of gold compounds has been recommended from time to time for this or that condition, but in general their therapeutic value is little. The Council on Pharmacy and Chemistry has not accepted any gold preparations for use in the treatment of rheumatism.

EVIDENCE OF GONORRHEAL INFECTION

To the Editor:—I have been consulted by a young woman on whom I operated in March 1931 for acute suppurative appendicitis. I removed the appendix through a McBurney incision, but I had a very clear view of the uterus, tubes and ovaries. The uterus was of normal size and in good position, and the tubes and ovaries were normal in every way. There were no adhesions. The wound was closed without drainage and the patient was discharged from the hospital on the seventh day, in excellent condition. She has never had any trouble since the operation and except for an attack of otitis media followed by a mastoid infection in 1934 she has never lost a day's work since the appendix operation. A few days ago some one told the young man to whom she is engaged that she had an attack of gonorrhea in December 1930. She came to me very much disturbed and insisted that I examine her. My examination gave no evidence that she has now or ever has had an infection of Skene's glands, urethra, Bartholin's glands or cervix. There is no erosion of the cervix. The uterus is in good position, freely movable, and there are no masses in the region of the tubes and ovaries. There is no tenderness anywhere in the pelvis. Smears from the urethra were negative. Smears from the cervix and vagina showed a few epithelial cells, no pus cells and no gonococci. There were a large number of lactic acid bacilli present. Is there any test that I can make or have made that will prove that this young woman was never infected with gonorrhea? I have treated hundreds of women for gonorrhea both in private practice and in a venereal disease clinic and I have never seen a patient so thoroughly well of gonorrhea that some evidence of past infection was not present. Does not gonorrhea in the female almost always cause change that may be recognized several years later? Please omit name.

M.D.

ANSWER.—If this patient really was infected by gonorrhea in December 1930 and if she was operated on in March 1931 and if at that time the uterus, tubes and ovaries were normal in every way, one may state that there was no evidence of gonorrheal involvement of the internal genital tract of this patient at that time.

In view of the fact that a recent examination shows no evidence of antecedent infection in Skene's glands, in the urethra, in Bartholin's glands or in the cervix and if at the present time there is no erosion of the cervix and the uterus is in good position and freely movable and there are no masses present, futhermore coupled with the fact that the smears from the urethra, cervix and vagina are negative at this time, the statement that there is no evidence of an antecedent gonorrheal infection is justified. One might discuss the advisability of making a gonococcus fixation test. Its value, however, under the circumstances, might be questioned.

From the evidence submitted, there appears to be no proof that this patient has or has had a gonorrheal infection.

ARTERIOSCLEROSIS OBLITERANS

To the Editor:—I have under my care a woman, aged 73, who complains of coldness in both feet, which is aggravated by walking and relieved by the local application of heat. There are absent pulsations in the dorsal pedis and posterior tibial arteries. Roentgen examination reveals calcification of the vessels in both legs. The Wassermann reaction is negative. She has an auricular fibrillation and partial heart block and at times complete heart block. The coldness is not constant and often passes off without any treatment. Occasionally there is blanching of the extremities in the elevated position and congestion in the dependent position. Vasodilators, positional exercises, contrast baths, baking and massage have been tried without any improvement. What other methods of treatment can you suggest? What is your opinion of local diathermy or intravenous saline solution as promising methods of relief? Please omit name.

M.D., New York.

ANSWER.—The advanced age of the patient and the calcification and occlusion of the arteries of the extremities indicate the presence of arteriosclerosis obliterans. The claudication in the legs with a given amount of exercise is caused by diminished volume flow of blood to an actively contracting muscle. The arteriosclerotic process probably is general and probably is the basis of the cardiac disease, fibrillation and partial incomplete heart block. In patients of this age it is not advisable to carry out any drastic treatment. Protection against excessive use of the feet, preservation of normal warmth with woolen hose, and great care in the trimming of nails to prevent injury are important, as ulcers or gangrene frequently follow some minor abrasions or injury to the skin. The possibility of diabetes should be considered. It is present in about 30 per cent of the cases of arteriosclerotic disease of the extremities. Vasodilators usually do not give relief of the symptom of claudication. Postural exercises and contrast baths may be used in moderation, the latter not more than three times a week, to prevent excessive soaking of the skin. The effects of local diathermy are too transient to justify the trouble and expense. Intravenous injection of saline solution or fever induced by the administration of foreign protein is not advisable, for this may change the coagulation properties of the blood and favor further thrombosis when patients are of this age. Collateral circulation develops slowly in old, arteriosclerotic subjects. Their expectancy of life is definitely diminished. With organic cardiac disease, the disability in the legs may be useful in restricting the patient's sphere of activity, this giving an additional safeguard to the heart. The newer tissue extracts, such as are obtained from the pancreas and from the skeletal and cardiac muscles, frequently give considerable relief from the pain of claudication and enhance the ability to walk.

NEO-MERPHENOL

To the Editor:—Kindly mail me some information regarding Neo Merphenol, by Lynch & Co., Kansas City, Mo., and Los Angeles.

S. A. VAN HOEFEN, St. Louis.

ANSWER.—The information on Neo-Merphenol that is in the files of the Council on Pharmacy and Chemistry is rather meager. An advertising circular received in November 1934 shows that the preparation is marketed with the claim that it is "A Blood Antiseptic that has been tried and not found wanting." The only hint as to the composition of the preparation occurs in the statement that it "is a pure chemical in which the mercury atoms have been combined to the carbon atoms of the benzine [sic] ring." This statement suggests relationship with the phenyl mercury compounds, which have recently come into use as bactericidal agents. However, cursory tests recently made in the A. M. A. Chemical Laboratory seemed to indicate that Neo-Merphenol contains a substance closely allied to if not identical with the organic mercury compound known as metaphen (see New and Nonofficial Remedies, 1935, p. 314).

The A. M. A. Chemical Laboratory requested the distributors of Neo-Merphenol (Lynch & Co.) to supply a quantitative statement of the composition of the product in order that the information might be transmitted to inquiring physicians. The firm's attention was also called to the fact that a specimen of Neo-Merphenol in the Council's files contained particles of such large dimension as to render intravenous injection of the product extremely hazardous. No reply having been received to the Laboratory's request, a second request was sent the firm by registered mail. This, too, failed to elicit a response from Lynch & Co.

The claims advanced in the advertising circular are extravagant and on the whole unsupported by scientific evidence. Furthermore, it is dangerous to use, particularly by intravenous injection, a substance the composition of which is unknown. THE JOURNAL has repeatedly called attention to the added responsibility which a physician assumes when he injects such a preparation into his patient.

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ROENTGEN IRRADIATION OF BRAIN IN JACKSONIAN EPILEPSY

To the Editor:—A friend of mind had jacksonian epilepsy from 1899 to 1913. In the latter year a trephining was carried out and a small fibro-endothelioma of hazelnut size was removed from the center of the left hand and arm. Up to 1925 there was no trouble, but following a "nervous breakdown," which started under severe mental strain during a demonstration of experimental "epilepsy," coupled with overwork, there have been difficulties from time to time. During overwork or special stress and especially during heat waves, when, in addition, sleep is poor, the left hand and arm constantly enter into consciousness, often with marked apprehension that an attack of the former malady may recur. Possibly gradual overweight of the patient, now 48 years old, may be a factor in giving an extra difficulty during hot weather (210 pounds, or 95 Kg., net; 5 feet 10 inches, or 178 cm., tall). In my opinion the scar left on the brain surface by the operation is the physical factor behind the difficulties; in discussing the matter, one of the younger x-ray men suggested that about four short, intensive x-ray treatments could do no harm but might do considerable good; we were thinking of a possible softening of the scar tissue. However, my friend knows what he has; the temporary paralysis of the left arm following immediately after the operation has completely vanished, so that he now can operate a typewriter perfectly well by the touch system, and he is somewhat reluctant to accept the suggestion of probable benefit. I shall therefore appreciate it if you will try to answer these two questions: 1. What is the evidence in favor of roentgen treatment of these conditions? 2. Has benefit been obtained by such treatment in similar cases? Please omit name.

M.D., Illinois.

ANSWER.—Whether or not exposure of the affected region of the brain to repeated, but moderate, doses of roentgen rays would lead to improvement in a case such as this is uncertain. It could be tried without danger provided the doses used do not exceed 500 roentgens per field. This might be repeated three or four times at intervals of one month. Larger doses, that is, doses approximating the limit of tolerance of the skin, might lead to increase rather than decrease in the amount of fibrous tissue present and hence should be carefully avoided. Reports of improvement in similar cases have not appeared in the literature, but the effect of such treatment in keloids and scars in general is well known.

DERMATALGIA

To the Editor:—A farmer, aged 60, has been troubled with a burning, stinging sensation occurring over various parts of the body, especially the face, abdomen and thigh. These sensations occur chiefly at night; they can be relieved by pressure. There are no objective signs of any skin lesions. Diagnoses of paresthesia rosae and universal pruritus have been made. Up to the present time the patient has been very resistant to local therapy. I would appreciate suggestions as to treatment. Please omit name and address.

M.D., Iowa.

ANSWER.—This is a case of the rare disorder called dermatalgia, a disease of the nerves of the skin causing no visible change in the skin. A Wassermann and Kahn test should be made on the blood serum and a cell count, globulin tests, Wassermann and Kahn test and colloidal gold or mastic tests on the spinal fluid. Dermatalgia should always arouse suspicion of tabes dorsalis. If this is ruled out, the possibility of malaria, diabetes, rheumatism, leukemia or another form of lymphoblastoma or leprosy should be considered. If no etiologic factor can be discovered, quinine, arsenic or the salicylates may be used empirically. Alternating applications of a hot water bag and ice bag may be tried, faradism, or hot baths followed by a thick dry cotton dressing. Hyperesthesia of the skin often accompanies dermatalgia; therefore the clothing should be nonirritating and talcum powder should be used freely.

SUBLUXATION OF SACRO-ILIAC SYNCHONDROSIS

To the Editor:—Your discussion under Queries and Minor Notes in the issue of Dec. 15, 1934, of "Subluxation of Sacro-Iliac Synchondrosis" was very interesting to me. But a more fundamental question seems to be the pathology and diagnosis of the condition, also etiology. I think a discussion of this would be profitable.

E. C. MCCULLOCH, M.D., Staten Island, N. Y.

ANSWER.—The whole subject of sacro-iliac subluxation is in a controversial state. The opinions vary from that of Goldthwait, who believes there is such a lesion, to those who deny categorically that there is such a lesion.

The pathologic changes occur chiefly in the internal and external ligaments. The diagnosis is based on the history of injury by pain, tenderness and asymmetry of the pelvis.

The pain is usually localized to the region of the joint affected and may follow the course of any of the nerves of the lumbosacral plexus, especially the first, second and third sacral components. The most common areas of referred pain are down the back of the leg, down the side of the leg, and to the region of the superior gluteal nerve in the buttock.

Roentgen observations are usually negative. Some believe that the roentgenogram will show a partial slipping. This is not generally accepted.

It is hoped that derangements of the sacro-iliac joint will in the near future be understood like internal derangements of the knee joint. But this will probably never be realized because of the relative inaccessibility of the sacro-iliac joint.

TREATMENT OF SYPHILIS

To the Editor:—A man, aged 40, had a chancre eight years ago. After secondary eruptions appeared he received four injections of arsphenamine and a few intramuscular injections, presumably of mercuric salicylate, over a period of about four weeks. Treatment was then discontinued. Examination at this date shows a 4 plus Wassermann reaction. The entire physical examination is negative. There has been no history of any illness except an occasional neuritis of the right leg, which he states antedated the chancre by two years. The spinal fluid has not been examined. Should this case be treated according to the scheme of treatment outlined for early syphilis by Stokes and others in THE JOURNAL, April 21, 1934? If not, will you kindly point out the necessary changes or outline the proper treatment? Kindly omit name.

M.D., New York.

ANSWER.—The early treatment in this case was entirely inadequate and of too short duration. The case should be reclassified as a late asymptomatic syphilis, although a more careful examination would probably reveal some evidence of structural change in the cardiovascular or nervous system. The treatment for late syphilis is a combined treatment beginning with iodides by mouth, followed by alternate courses of a heavy metal, either mercury or bismuth compounds, and one of the arsphenamines. Treatment should be continued, with short periods of rest between courses until the Wassermann reaction becomes negative. There is no definite scheme of treatment for late syphilis, as much depends on the condition of the affected organs and the natural resistance of the patient. Many authorities advocate prolonged intermittent treatment over a period of many years in preference to the continuous plan. A great deal depends on how well patients past middle age tolerate intensive therapy, and the treatment may have to be modified accordingly. In general, the greatest reliance should be placed on iodides and on preparations of mercury and bismuth.

FIBROIDS IN PREGNANCY WITH CESAREAN SECTION

To the Editor:—Can you state the incidence of cases in which a uterine fibroid completely obstructing pregnancy has required cesarean section followed by hysterectomy? I have searched the various textbooks and quarterly index but am still far from satisfied. Would such a case be of sufficient interest to report? Any information as to incidence or with references will be appreciated.

FRANK J. CLARKE, M.D., Brooklyn.

ANSWER.—There are no statistics giving specifically the number of cases in which uterine fibroids have completely obstructed labor, requiring cesarean section and hysterectomy. Such cases are, of course, not common but they occur in the practice of every busy obstetrician. Fibroids, during pregnancy, are found in percentages varying from 5 to 15, depending on the part of the country they come from and the accuracy of observation; but it is exceptional that they completely block the passage. Often nature lifts them out of the pelvis during the latter months of pregnancy or in labor itself, allowing the child to slip by them.

Nor is it always necessary to extirpate the fibroids at the time of cesarean section. Often the hysterectomy becomes so formidable that the wiser policy would be to remove the child, leaving the fibroid for subsequent extirpation when the intense vascularization of the pelvis accompanying pregnancy has subsided. Indeed, unless the operator is exceptionally skilful, this should be the rule. Reporting of such a case would be interesting but would not add much to our general knowledge.

VASOSTOMY

To the Editor:—What is the present status of vasostomy with injection of the seminal vesicles in chronic seminal vesiculitis of nonspecific origin? The patient in question has been treated by massage, vaccines and foreign protein, with no relief. More radical measures must be undertaken because of an associated arthritis of the same duration as the vesiculitis. What are the chances of sterility resulting?

M.D., Ohio.

ANSWER.—Vasostomy with injection of the seminal vesicles in chronic seminal vesiculitis is rarely being used at the present time. This operation does not enjoy the popularity that it did ten years ago. Papers dealing with the end results of the operation are few and far between. H. L. Kretschmer published a paper in THE JOURNAL, March 19, 1927, entitled "The Persistence of Symptoms after Vasostomy."

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In many instances, failure to obtain relief is due to the presence of strictures in the urethra. It may be well to explore for strictures and if they are present to pass large sounds before undertaking any radical measures. It is always well to locate possible foci of infection in other parts of the body, such as the teeth, sinuses and tonsils.

Among urologists at this time the consensus on this subject is to the effect that vasostomy does not cure seminal vesiculitis. This view no doubt is responsible for the rare intervals at which vasostomy is done.

The chances of sterility resulting from the operation are great; in other words, a large number of patients are rendered sterile by it.

ANALGESIC DRUGS

To the Editor:—I would appreciate information as to what drug or drug combinations, to be taken by mouth, you would recommend as having the most powerful analgesic effect with little or no hypnotic effect.

HARRY G. ARMSTRONG, M.D., Dayton, Ohio.

ANSWER.—A combination of analgesics acting in different ways is assumed according to Bürgi's rule to be more efficient than any one of them alone. For instance, the following combination of one half of the average U. S. P. dose of the following analgesics with a smaller relative dose of extract of hyoscyamus—to antagonize possible sweating and yet not produce troublesome dryness of the mouth—is likely to relieve pain with less undesirable by-effects than if a larger dose of any one were taken:

Extract of hyoscyamus	0.15 Gm.
Phenobarbital	0.25 Gm.
Acetanilid	1.50 Gm.
Acetylsalicylic acid	2.50 Gm.

Mix and divide into fifteen capsules.

Label: One every hour until relieved or until three are taken, then every two to four hours as required.

For the relief of very severe pain such as that of gallbladder or renal colic, a dose of 0.03 Gm. of codeine phosphate per capsule, or 0.45 Gm. for the fifteen capsules, might be added with great advantage.

DEATH BEFORE ACCIDENT

To the Editor:—I should like a medical opinion about a certain problem that has arisen in my practice. Two cars were wrecked by a head on collision and the occupants of both cars injured severely, one occupant being rendered unconscious and riding alone, and the occupants of the other car being severely bruised and cut, for one of these and the other member of this car was found dead. The driver of the car who was riding alone has been indicted for manslaughter and he is contending that the person who was found dead in the other car involved was already dead at the time of the wreck, on these grounds: The wreck occurred at night and the dead person had been drinking rather heavily that afternoon and night according to witnesses, and in spite of the complete wreck of the car in which the dead person was found and the severe and extensive lacerations of the face, neck and crushed chest, there was no blood on the dead person. The question is whether one could have such severe lacerations and have no bleeding unless dead for some time. I am coroner and was called to the wreck and found the dead person in the car and mangled badly, but none of the cuts and lacerations were oozing blood. I saw her thirty or forty minutes after the wreck. What are the chances of the person being dead at the time of the wreck?

M.D., North Carolina.

ANSWER.—In the complete absence of bleeding from the cuts and lacerations there would seem to be no other explanation of the situation as described than that the person was dead when the collision occurred. A thorough postmortem examination would have been of great interest in a case like this.

SODIUM CITRATE IN BLOOD TRANSFUSION

To the Editor:—1. Is U. S. P. sodium citrate, diluted with triple distilled water and subsequently autoclaved, suitable and adequate for intravenous use in blood transfusions? 2. A 10 per cent solution of 2.5 per cent sodium citrate is usually recommended to prevent clotting. I have occasionally seen a few clots in blood so treated and well mixed. Is there any reason why a greater strength of citrate than this should not be used in doing a transfusion of, say 500 cc.? Kindly omit name.

M.D., Michigan.

ANSWER.—1. It is best to use the chemically pure sodium citrate of C. P. reagent quality, diluted with triple distilled water and subsequently autoclaved for blood transfusions. Any other type of citrate solution is apt to give reactions. Some practitioners have used for many years a 2 per cent sodium citrate solution, luke warm, which if properly made and chemically pure should prevent clotting. If the solution is stronger than that it is apt to produce marked reactions, and if weaker than that it produces clotting.

2. Richard Lewisohn of the Mount Sinai Hospital of New York has laid down every detail of the citrate method and found that the best solution is a 2 per cent solution of chemically pure sodium citrate.

USE OF DIPHTHERIA TOXOID

To the Editor:—Kindly advise me whether there would be danger of severe reaction from the injection of a single dose of diphtheria toxoid, alum precipitated, in a child, aged 13 years, who has had numerous asthmatic attacks. Kindly omit name.

M.D., Illinois.

ANSWER.—If there is little or no danger of exposure to infection with diphtheria, postponement of the injection of toxoid should be considered. If it seems necessary to give toxoid, it would be better to determine beforehand whether the patient is susceptible to diphtheria. He may be insusceptible, especially if he has been living in a community where diphtheria is prevalent. In case toxoid must be given, probably there would be less danger of any severe reaction if the "single dose" should be injected in several instalments at intervals of four or five days.

TRAUMA AND ANEMIA

To the Editor:—A married woman, aged 62, was in perfect health until she sustained a fractured tibia in an automobile accident one and a half years ago. About one month following the accident, typical pernicious anemia developed. To me this appears nothing more than a coincidence, but as she is endeavoring to establish a causal relationship in court (the case is coming up shortly) I should appreciate your opinion in the matter. Please omit name.

M.D., New Jersey.

ANSWER.—There is no known relationship between trauma of the type described and the appearance of true pernicious anemia. Pernicious anemia appears in individuals of a definite constitutional type, and the blood changes are primarily related to the defective function of the stomach secretions. If the injury had produced these pathologic changes in the stomach (which is extremely improbable), it is unlikely that the anemia would have appeared in less than two years, if the patient had been perfectly well previous to the accident. In complete gastric resection, the appearance of the anemia usually does not appear until this period of time has elapsed.

NEOARSPHENAMINE IN FURUNCULOSIS

To the Editor:—In Queries and Minor Notes (THE JOURNAL, July 27, p. 304) is a statement on persistent furunculosis. Some seven or eight years ago, as the result of my using neoarsphenamine intravenously in the treatment of certain types of infection in the urinary tract, I suggested to the clinicians in the Jackson Clinic that they employ neoarsphenamine intravenously in some cases of recurrent furunculosis.

I cannot say, without reviewing our records, how many cases of recurring or recurrent furunculosis we have treated, but there have been many; and again without reviewing the records I cannot say, but I cannot recall a case that was not decidedly benefited, if not cured, by the intravenous injection of neoarsphenamine 0.3 Gm. at five day intervals. Many of these patients had had the customary vaccines, roentgen therapy and diets. Several patients have had recurrences, but they would immediately report and request the treatments.

Our records show one case in which a young boy who was operated on for an appendiceal abscess misplaced his wound dressing and scratched the abdominal skin about the wound. Along these scratch marks there developed many papulovesiculopustular lesions. They were treated by the usual method of opening them and applying various antiseptic solutions. Numbers continued to appear about the wound and over the entire abdomen, chest and other portions of the body. They were opened and antiseptic solutions applied. The patient was in very poor general condition. In spite of the local treatment the lesions continued to appear and were extremely painful, although superficial in nature. Following one or two injections of neoarsphenamine no new lesions appeared and within a few days all the old lesions had entirely regressed.

I do not wish to convey the meaning that the use of neoarsphenamine is specific for all cases of furunculosis. Yet every member of our staff has been markedly impressed and exceedingly pleased with the results of this form of treatment.

During the past few days, while some case records of perinephric abscess were being reviewed, one case was found in which there was a preceding history of carbuncle followed by recurring furuncles on the back of the neck. Following admission of the patient to the hospital, furuncles continued to develop over the hands, arms, and various parts of the body. Several days following the incision and drainage of the abscess several furuncles developed at various sites. The patient was given an injection of neoarsphenamine, and during an interval of five days two new lesions developed. Following the second injection of neoarsphenamine, no new lesions developed and the old ones rapidly subsided. A discharge note made several weeks later stated that no furuncles had developed since the last injection.

GEORGE H. EWELL, M.D., Madison, Wis.

Council on Medical Education and Hospitals

ORGANIZED AND COURTESY STAFFS OF GENERAL HOSPITALS

A Study by the Council on Medical Education and Hospitals of the American Medical Association with the Cooperation of the Council of the American Hospital Association

What is the typical relation of hospitals to physicians in the average community? Do physicians generally share in the facilities of the hospitals and to what extent? In the hospital number for 1933 of THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION it was stated that 126,261 physicians had hospital connections, 101,518 being on the staffs (organized and courtesy), 2,018 were resident physicians, 7,757 interns and 2,437 hospital executives. The total is 78 per cent of 161,359 physicians, the total number of physicians in the United States as given by the American Medical Association Directory for 1934.

The facts in the following paragraphs resulted from a questionnaire prepared jointly by the bodies mentioned above. This was sent to 2,936 general hospitals throughout the United States, excluding (*a*) those owned and operated by governments, national, state or local; (*b*) those organized for profit; (*c*) those in cities and towns of more than 250,000. The reason for excluding the hospitals in the large cities was that the staff situation is generally different in metropolitan centers as compared with medium-sized and smaller places and most of the teaching institutions are located in these large cities.

Answers were received from 1,332 of the hospitals addressed, and statements in this report are representative only of those hospitals which returned the questionnaire.

Most of these hospitals have both organized and courtesy staffs. An organized staff is a group having a definite advisory relation to the governing body of the hospital, such as the board of trustees, and being responsible for the professional work of the hospital. The courtesy staff is made up of all or certain of the physicians in the locality, not members of the organized staff, who may hospitalize patients in the hospital, sometimes under certain restrictions. The average organized staff was found in this study to consist of twenty-six physicians, the average courtesy staff of twenty.

Table 1 gives information with regard to organized and courtesy staffs and the number of staff members in the 1,332 responding hospitals. Of these, 971 (or 73 per cent) have organized staffs and 876 (or 66 per cent) have courtesy staffs. In the Middle Atlantic states 92 per cent of the hospitals reported organized staffs, and in the Pacific states only 54 per cent reported organized staffs.

TABLE 1.—*Relation of Hospitals to Staffs*

Geographic Divisions	Hospitals Reporting	Organized Staff		No. of Staff Members
		Yes	No	
New England states	141	124	17	3,449
Middle Atlantic	216	197	19	6,585
East North Central	203	149	54	4,441
West North Central	216	132	84	2,716
South Atlantic	142	116	26	2,269
East South Central	69	50	19	875
West South Central	136	87	49	2,121
Mountain	99	56	43	791
Pacific	110	60	50	2,250
Total	1,332	971	361	25,437

TABLE 2.—*Courtesy Staffs*

Geographic Divisions	Hospitals Reporting	Courtesy Staff			No. of Physicians on Courtesy Staff
		Yes	No	No Answer	
New England states	141	108	26	7	2,944
Middle Atlantic	216	174	35	7	5,695
East North Central	203	132	40	31	3,269
West North Central	216	124	59	33	1,824
South Atlantic	142	107	26	9	1,718
East South Central	69	44	19	6	476
West South Central	136	85	35	16	1,058
Mountain	99	40	39	20	534
Pacific	110	62	24	24	1,253
Total	1,332	876	303	153	18,171

TABLE 3.—*Staff Meetings*

More often than monthly	116
Monthly	792
Less often than monthly	40
Not at all	384
Number of hospitals reporting	1,332

TABLE 4.—*Attendance at Staff Meetings*

More than half the organized staff	692
Between 25 and 50% of the organized staff	205
Less than 25% of the organized staff	23
Not given	28

As to courtesy staffs, 81 per cent of the reporting hospitals in the Middle Atlantic states claimed to have them, while only 40 per cent in the Mountain states had them. Table 2 gives the information.

It is reported that staff meetings are usually held monthly and are fairly well attended. More than four fifths of the staffs hold monthly meetings. One staff in ten holds meetings oftener and a very few hold them less often.

Better than 50 per cent attendance of staff members was reported by 71 per cent of the hospitals having staffs (table 4).

Apparently the practice in about half of the hospitals is to invite the courtesy staff members to attend the organized staff meetings. The questionnaires show that 46 per cent of the hospitals having courtesy staffs permit these physicians to participate in regular staff meetings (table 5).

The study endeavored to determine how important courtesy staff members were to the hospital's occupancy. It was found that an average of 15 per cent of the patients admitted during 1933 in hospitals having courtesy staffs were admitted by physicians on the courtesy staff. The number of patients so admitted ranged from half of all those admitted in Washington hospitals having courtesy staffs to only 7 per cent admitted to Arkansas hospitals. The part played by courtesy staffs in keeping the hospital beds occupied was greatest in the New England states, where they admitted 25 per cent of all patients, and in the Pacific states, where they admitted 24 per cent of all patients. The proportions in the Middle Atlantic and Southern states range between 12 and 15 per cent; in most of the Central states between 18 and 20 per cent. The information on the number of patients admitted by courtesy staff members may be summarized as in table 6 for the whole country.

TABLE 5.—*Participation of Courtesy Staffs in Staff Meetings*

Courtesy staffs participating in staff meetings	407
Courtesy staffs not participating in staff meetings	345
Not given	124
Total number of courtesy staffs	876

TABLE 6.—*Patients Admitted by Members of Courtesy Staffs*

Number of hospitals reporting	1,332
Number of hospitals reporting courtesy staffs	876
Number of hospitals reporting patients admitted by courtesy staffs	529
Patients admitted by courtesy staff in these 529 hospitals (1933)	146,473
Total patients admitted in these 529 hospitals (1933)	916,239
Percentage admitted by courtesy staff	15.9

SUMMARY

It appears that the majority of voluntary hospitals in our smaller cities have both organized and courtesy staffs, have monthly staff meetings in which courtesy staff members often participate, and have better than 50 per cent attendance at these meetings. Where courtesy staffs exist, they admit on the average one sixth of the patients entering the hospital, but this figure shows wide variations.

Medical Examinations and Licensure

COMING EXAMINATIONS

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: Written examination and review of case histories of Group B applicants will be held in various cities of the United States and Canada, Dec. 7. *Applications must be filed not later than Nov. 1.* Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh (6).

AMERICAN BOARD OF OPHTHALMOLOGY: The Cincinnati examination previously announced will not be held. The next examination will be given in St. Louis, Nov. 18. *Application must be filed before Sept. 15.* Sec., Dr. William H. Wilder, 122 S. Michigan Ave., Chicago.

AMERICAN BOARD OF ORTHOPAEDIC SURGERY: St. Louis, Jan. Sec., Dr. Fremont A. Chandler, 180 N. Michigan Ave., Chicago.

AMERICAN BOARD OF OTOLARYNGOLOGY: Cincinnati, Sept. 14. Sec., Dr. W. P. Wherry, 1500 Medical Arts Bldg., Omaha.

AMERICAN BOARD OF PEDIATRICS: Philadelphia, Oct. 10 and St. Louis, Nov. 20. Sec., Dr. C. A. Aldrich, 723 Elm St., Winnetka, Ill.

AMERICAN BOARD OF RADIOLOGY: Detroit, Dec. 1-2. Sec., Dr. Byrl R. Kirklin, Mayo Clinic, Rochester, Minn.

ARIZONA: *Basic Science.* Tucson, Sept. 17. Sec., Dr. Robert L. Nugent, Science Hall, University of Arizona, Tucson. *Medical.* Phoenix, Oct. 1-2. Sec., Dr. J. H. Patterson, 826 Security Bldg., Phoenix.

COLORADO: Denver, Oct. 1. Sec., Dr. Harvey W. Snyder, 422 State Office Bldg., Denver.

GEORGIA: Atlanta, Oct. 8-9. Joint-Secretary, State Examining Boards, Mr. R. C. Coleman, 111 State Capitol, Atlanta.

IDAHO: Boise, Oct. 1. Commissioner of Law Enforcement, Hon. Emmitt Pfost, 205 State House, Boise.

MICHIGAN: Lansing, Oct. 8. Sec., Board of Registration in Medicine, Dr. J. Earl McIntyre, 202-3-4 Hollister Bldg., Lansing.

MINNESOTA: *Basic Science.* Minneapolis, Oct. 1-2. Sec., Dr. J. C. McKinley, 126 Millard Hall, University of Minnesota, Minneapolis. *Medical.* Minneapolis, Oct. 15-17. Sec., Dr. Julian F. Du Bois, 350 St. Peter St., St. Paul.

MONTANA: Helena, Oct. 1. Sec., Dr. S. A. Cooney, 7 W. 6th Ave., Helena.

NATIONAL BOARD OF MEDICAL EXAMINERS: The examination will be held in all centers where there are Class A medical schools and five or more candidates desiring to take the examination, Sept. 16-18. Ex. Sec., Mr. Everett S. Elwood, 225 S. 15th St., Philadelphia.

NEW HAMPSHIRE: Concord, Sept. 12-13. Sec., Board of Registration in Medicine, Dr. Charles Duncan, State House, Concord.

NEW JERSEY: Trenton, Oct. 15-16. Sec., Dr. Arthur W. Belting, 28 W. State St., Trenton.

NEW MEXICO: Santa Fe, Oct. 14. Sec., Dr. Le Grand Ward, Sena Plaza, Santa Fe.

NEW YORK: Albany, Buffalo, New York and Syracuse, Sept. 16-19. Chief, Professional Examinations Bureau, Mr. Herbert J. Hamilton, 315 Education Bldg., Albany.

PUERTO RICO: San Juan, Sept. 3. Sec., Dr. O. Costa Mandry, Box 536, San Juan.

RHODE ISLAND: Providence, Oct. 3-4. Dir., Department of Public Health, Dr. Edward A. McLaughlin, 319 State Office Bldg., Providence.

WISCONSIN: *Basic Science.* Madison, Sept. 21. Sec., Professor Robert N. Bauer, 3414 W. Wisconsin Ave., Milwaukee.

WYOMING: Cheyenne, Oct. 7. Sec., Dr. G. M. Anderson, Capitol Bldg., Cheyenne.

Nebraska June Examination

Mrs. Clark Perkins, director, Nebraska Bureau of Examining Boards, reports the written examination held in Omaha, June 11, 1935. The examination covered 10 subjects and included 92 questions. An average of 75 per cent was required to pass. Eighty-eight candidates were examined, all of whom passed. The following schools were represented:

School	PASSED	Year Grad.	Number Passed
Creighton University School of Medicine		(1934, 6), (1935, 19)	25
University of Nebraska College of Medicine		(1932, 2), (1934, 5), (1935, 56)	63

Five physicians were licensed by reciprocity and 1 physician was licensed by endorsement from January 11 through July 24. The following schools were represented:

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Howard University College of Medicine		(1933)	Kansas
Loyola University School of Medicine		(1933)	Iowa
University of Minnesota Medical School		(1933)	Minnesota
Washington University School of Medicine		(1929)	Iowa
University of Nebraska College of Medicine		(1933)	Maryland

School	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
Loyola University School of Medicine		(1933)	N. B. M. Ex.

Book Notices

The Patient and the Weather. By William F. Petersen, M.D., with the Assistance of Margaret E. Milliken, S.M. Volume II: Autonomic Dysintegration. Cloth. Price, $6.50. Pp. 530, with 249 illustrations. Ann Arbor, Mich.: Edwards Brothers, Inc., 1934.

The Patient and the Weather: By William F. Petersen, M.D., with the Assistance of Margaret E. Milliken, S.M. Volume III: Mental and Nervous Diseases. Cloth. Price, $5. Pp. 375, with 192 illustrations. Ann Arbor, Mich.: Edwards Brothers, Inc., 1934.

This is an interesting study of an insistent problem. Every physician who has studied mental disorders or conditions bordering on the mental recognizes that the weather has a definite effect on the activity and the welfare of his patients. Many students of the problem have attempted to keep charts, but nothing consistent has been reported and the present study is really more suggestive than constructive. It is unfortunate that the volumes have not been released in consecutive order, for the publication of volumes II and III without volume I leaves one slightly beclouded. The series will probably extend to five or six volumes. The basic theory behind the author's studies is that the individual is a product of his environment, one of the most important features of which is the weather. There are two phases in the individual's metabolism, in one of which the organism must be at any given time. One phase is characterized by anabolism, reduction and vascular constriction and the other is characterized by oxidation and dilatation of the vascular bed, as well as catabolism. Certain parallels are drawn between sympathicotonia, but a complete parallel is not found. With a change in the weather comes dilatation or spasm, and the organism's ability to react is significant. When there is an inability to respond there is disease. The individual's body type and his biochemical makeup are significant in this respect. The body reacts by these means to the various meteorological "fronts" and changes in season.

Volume II deals with such topics as focal infection, headache, epilepsy, eclampsia, mucous colitis and gastric ulcer, the neuroses, asthma, urticaria, glaucoma, diseases of the ear and the teeth, and alopecia areata. The author in each of these disorders gives a general discussion of the vascular process involved, including an analysis of the meteorological genesis of the condition. The condition is described carefully, with particular reference to relevant literature and to the vascular changes in individual cases. The cases are written up in detail, and the results of chemical examinations are given. The chapter is accompanied with tables showing clinical observations compared to meteorological conditions. At the beginning of most of the topics there is a "spot map" showing the frequency of the disorder in given geographic areas in this country. These can be compared with meteorological maps to show the relationship to weather.

Volume III, which treats of mental disorders, seems a little more clear cut than the second volume. The first eight chapters, which deal with mental disorders in general, are accompanied by excellent maps showing national distribution of the various types of mental and allied cases as well as graphs to show the monthly admissions of the various disorders to mental hospitals. In the second part of this volume are eighteen thorough case histories of psychotic patients presented to show the influence of the weather. The last part of the book consists of chapters on multiple sclerosis, tabes, dementia paralytica, poliomyelitis and meningitis. While some relationships are shown, there is no general conclusion to be drawn, for the evidence is insufficient. The study has not reached a point at which it is past the research stage, but to Dr. Petersen must be given praise for having the temerity to attack such a difficult subject, for having done a thorough piece of work and for having shown a great deal of intelligence in putting together his material. Much of it is obscure, however. Most of the illustrations are complicated graphs comparing physiologic and meteorological phenomena in and about the patient. Some of these charts are vast undertakings with as many as fifteen variants recorded. The value of the book to the physician in practice is nil except from an educational standpoint. Some chapters in each volume should be helpful to individual specialists in analyzing obscure cases, but the real use of the work will be to students of biochemistry, physiology and psychology.

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Diet and Like It: A Guide to Pleasant and Healthful Dieting for Those Who Would Reduce and Those Who Would Not Gain. By Mabel E. Baldwin, Ph.D. With an introduction by Daniel C. Darrow, M.D., Assistant Professor of Pediatrics, Yale University School of Medicine. Cloth. Price, $2.50. Pp. 230. New York & London: D. Appleton-Century Company, Inc., 1935.

This book is sound. It will please physicians and could be read with profit by most of them. Part 1 gives menus for the correction of obesity, clearly detailed in household measures, with the necessary explanations. Part 2 contains an excellent discussion of the general principles of nutrition and a table of food values. This presentation is simple enough to be understood easily by the interested layman. It is the most useful part of the book and, if read and applied by every housekeeper, the general health of the community would be improved. There should be a big demand for correct information, made easily available as in this book, on a subject so important as nutrition. Physicians will do well to recommend "Diet and Like It" to patients and friends. As a practical treatise on the treatment of obesity, however, Dr. Baldwin is too optimistic in the title. Obese patients will not like it. Indeed, these menus alone will not even be effective with most patients. A few of them, the careless eaters who take a roll and ball of butter thoughtlessly while waiting for dinner to be served, will be rendered food conscious by reading the book, and that will be enough. With most obese patients overeating is a fixed sensual indulgence. Such patients on these menus will not be hungry if they distinguish between hunger and the memory of the fun of eating. But they will not do this. They need firm handling by a determined physician who tells them they must give up for a time the "fun of eating" instead of "diet and like it." Such patients do better when no effort is made to pander to sensuality in appetite. A small portion of cheese at the end of a meal lets down less painfully the confirmed dessert eater. The same applies to salad dressings with a base of liquid petrolatum. These suggestions are of value more in the prevention than the cure of obesity, but so is this book.

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Scientific Organizations in Seventeenth Century France (1620-1680). By Harcourt Brown, M.A., Ph.D. History of Science Society Publications, new series V. Cloth. Price, $3. Pp. 306. Baltimore: Williams & Wilkins Company, 1934.

This book attempts to supplement Ornstein's "The Rôle of the Scientific Societies of the Seventeenth Century" and Morgan's "Histoire du journal des savants," the former of which the author thinks is particularly lacking in references to the ultimate sources of our knowledge of that time, namely, the books, pamphlets and letters of that period—a source material more illuminating than the documentation of modern authors, which is sometimes not especially discriminating. "Academies" prior to the seventeenth century, the author points out, were not very effective, since they were opposed by the princes and churches alike as dangerous on political and religious grounds Scholarly historical exploitation by the authors of the manuscripts and letters and books of the savants of the time are most important in elucidating how these men of science worked and thought and just how the learned bodies and academies came into being under the guidance of certain leaders. The author has made an important and interesting contribution to the scientific status of that period. It is surprising, however, to note that no reference at all was made to the first scientific academy ever organized, Die Deutsche Akademie der Naturforscher (1652), although the origin of the Royal Society of London (1662), ten years later, comes in for a share of discussion.

Las localizaciones extra-intestinales de la amebiasis. (Relato oficial al V.° Congreso nacional de medicina). Por el Dr. David Staffieri, prof. titular de clinica medica. Paper. Pp. 212. Rosario: Editorial Medica Lagos, 1934.

The author has collected and arranged systematically a large amount of material collected from published papers on extra-intestinal amebiasis. As stated in the introduction, he has collected what seemed to him the more interesting material and neither the experimental data nor the bibliography is complete. This incompleteness is most apparent in the omission of most of the contributions of the last few years and especially of the work of investigators in the United States. The author presents an uncritical acceptance of much material that is unsubstantiated and unconfirmed. No criteria of diagnosis are given, nor is any other basis presented by which the reports and data can be evaluated. The lack of critical judgment and selection, the marked incompleteness of treatment in general, reduce the value of the book for scientific use and authoritative reference. The bibliography is of value, so far as it goes.

Surgical Pathology of the Peritoneum. By Arthur E. Hertzler, M.D., Surgeon to the Agnes Hertzler Memorial Hospital, Halstead, Kansas. Hertzler's Monographs on Surgical Pathology. Cloth. Price, $5. Pp. 304, with 201 illustrations. Philadelphia & London: J. B. Lippincott Company, 1935.

This volume is one of a series of monographs on surgical pathology by the same author. If the others equal this one in quality, the entire series is excellent. The book represents the author's forty years of interest, thought, study, experience and experiment in the peritoneum. All these are reflected in its every page. The work is divided into thirteen chapters and covers the subject completely though not exhaustively from the anatomy, embryology and physiology through healing of wounds, peritonitis, changes in circulation and tumors. The questions of adhesions and peritonitis are discussed particularly fully. The book is written in clear, simple style. Its chief attraction lies in the fact that it presents not only the author's intimate knowledge of the peritoneum and its diseases but also the wisdom of a rich surgical experience. The numerous beautiful and excellent drawings and reproductions of photographs enhance and clarify the text. This is a really valuable contribution to surgical literature and is recommended to all interested in surgery.

Landois' Lehrbuch der Physiologie des Menschen mit besonderer Berücksichtigung der praktischen Medizin. Bearbeitet von Dr. med., Dr. phil. h. c. R. Rosemann, o. ö. Professor der Physiologie und Direktor des physiologischen Instituts der Westfälischen Wilhelms-Universität zu Münster. Twenty-first edition. Paper. Price, 18 marks. Pp. 858, with 172 illustrations. Berlin and Vienna: Urban & Schwarzenberg, 1935.

Written essentially for medical students and practitioners of medicine, the book presents chiefly the well established facts of physiology. Theoretical discussions are not emphasized. Readers interested in theory and detail will find an unusually extensive bibliography at the end of each section. Numerous references are made to pathologic physiology. Most sections, furthermore, end with a short historical sketch on the rise of our knowledge of the subject matter just dealt with. Fundamental aspects of biochemistry are not omitted. This single volume textbook of physiology continues to be, in spite of several shortcomings (e. g., endocrines) the best treatise on the subject in either the German or the English language.

Kurzgefasstes Lehrbuch der Psychiatrie. Von Dr. Johannes Lange, o. Professor der Psychiatrie in Breslau. Paper. Price, 7.20 marks. Pp. 254. Leipzig: Georg Thieme, 1935.

Professor Lange, who was long associated with Kraepelin and who is responsible for the last edition of Kraepelin's handbuch, has succumbed to the urge of writing a compendium of psychiatry. The views expressed are essentially those of Kraepelin and the book contains a fairly good description of most of the mental disorders. There is nothing new that is taken up and the dynamic psychologic point of view is inadequately represented. There seems hardly any justification for the appearance of this volume at the present time, as there are a number of other volumes of identical scope already available.

Experimental Physiology. By Sir Edward Sharpey-Schafer, F.R.S. Fifth edition revised by the author, with the co-operation of W. A. Bain, Ph.D., Lecturer in Experimental Physiology in the University of Edinburgh. Cloth. Price, $2.20. Pp. 168, with 94 illustrations. New York, London & Toronto: Longmans, Green & Company, 1934.

Judging by American standards, it was concluded, after first perusal, that this laboratory manual in experimental physiology was prepared by the late Sir Edward Sharpey Schafer for college students; for in the preface occurs no statement for whom the book was prepared. On the paper cover, however, appears a statement that "the new matter is of special significance for medical students, for whom the work is primarily intended." The book is quite too elementary for the students of most grade A medical schools of this country; however, it contains a number of diagrams that instructors of high school or college physiology might find useful in presenting experimental methods and the principles of physiologic apparatus to their pupils.

Miscellany

STATUS OF ALLERGY TEACHING AS INDICATED IN MEDICAL SCHOOL ANNOUNCEMENTS

I. HARRISON TUMPEER, M.D.
CHICAGO

This review concerns itself solely with the allergy matter published in the current medical school announcements. The apparent nonchalant assignment of allergy in medical courses aroused interest in the subject. Catalogues were solicited from all the medical colleges named in the Educational Number of THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION of Aug. 25, 1934. Announcements were received from seventy-nine of eighty-six colleges. There was no opportunity to review the curriculums of seven schools (table 1). Allergy was not mentioned in sixty catalogues (table 2) and was listed in nineteen announcements, or 24 per cent of those which were received (table 3).

In only one school, namely, Yale University, is allergy entirely the province of pediatrics. At the University of Rochester there is a course in pediatric allergy conducted by my former associate, Dr. Jerome Glaser, as well as a course in the department of medicine. In addition to a required course in the department of medicine at the University of Michigan, an elective sensitization clinic is conducted at the University Hospital by members of the pediatric department. Although classified under the department of medicine at the University of Oregon, its course is conducted at a children's hospital. Columbia University offers a clinical clerkship in allergy in the department of dermatology as well as a section in the department of medicine. The catalogue of the New York Homeopathic Medical College and Flower Hospital mentions an arthritis and allergy department at the hospital but does not describe courses in the medical school. At Stanford University the study of allergic reactions is included in an elective course in immunology, apparently in the second year. At Duke University allergy has the standing of a specialty, equivalent to syphilis, urology and orthopedics. Altogether, four allergy courses are in some way bound up with pediatrics; one is associated with dermatology, one is represented by a hospital department, one is mentioned in immunology, and one has the rating of a specialty. The remaining eleven are entirely subheads of medicine. The subject is offered naturally in the clinical period, mostly in the fourth year. The number of students who have access to these courses varies from a few to the entire class. About one third of the courses are required. In some instances the required or elective status was not emphasized. The amount of time varies, as nearly as can be determined, from about four to sixteen hours. The rank of the instructors varies from lecturers to professors.

TABLE 1.—*Medical Schools from Which Catalogues Were Not Received*

Medical School	City and State
Howard University College of Medicine	Washington, D. C.
Marquette University School of Medicine	Milwaukee, Wis.
Mississippi, University of	University, Miss.
Oklahoma, University of	Oklahoma City, Okla.
Saskatchewan, University of	Saskatoon, Saskatchewan
Wake Forest College School of Medicine	Wake Forest, N. C.
West Virginia, University of	Morgantown, W. Va.
Total, 7	

The data obtained are of necessity a statement of the minimum attention that is paid to allergy in the medical schools. It is acknowledged that many medical school catalogues are slow to change their contents in keeping with the courses. This is particularly true of a subject such as allergy. Many schools are groping experimentally in their efforts to place the subject in the curriculum. Division of the subject into lectures and clinics is changing too fast for the catalogues to indicate. It may be assumed that more medical schools than the nineteen mentioned must be devoting some time to the subject, whether in the departments of internal medicine, pediatrics, dermatology, otolaryngology, immunology or others, without actually listing the subject. In some announcements the descriptions of courses are brief and probably include allergy without so stating.

TABLE 2.—*Medical Schools Not Listing Allergy in Their Catalogues*

Alabama, University of	1934-1935
Albany Medical College	1933-1934
Alberta, University of	1934-1935
Arkansas, University of	1934-1935
Boston University	1934
Buffalo, University of	1933
California, University of	1934-1935
Cincinnati, University of	1934-1935
Colorado, University of	1934
Creighton University	1934-1935
Dalhousie University	1934-1935
Dartmouth College	1933-1934
Emory University	1934-1935
George Washington University	1934-1935
Georgia, University of	1933-1934
Indiana, University of	1934-1935
Iowa, University of	1934-1935
Jefferson Medical College	1934-1935
Johns Hopkins University	1934-1935
Kansas, University of	1934-1935
Laval University	1934-1935
Long Island College of Medicine	1934-1935
Louisville, University of	1934-1935
Loyola University	1933-1934
Manitoba, University of	1934-1935
Maryland, University of	1934-1935
McGill University	1934-1935
Medical Evangelists, College of	1934-1935
Meharry Medical College	1934-1935
Minnesota, University of	1933-1934
Missouri, University of	1934-1935
Montreal, University of	1934-1935
Nebraska, University of	1934-1935
North Carolina, University of	1933-1934
North Dakota, University of	1934-1935
Northwestern University	1934-1935
Pennsylvania, University of	1934-1935
Pennsylvania, Women's Medical College of	1934-1935
Pittsburgh, University of	1934-1935
Queen's University	1934-1935
St. Louis University	1934-1935
South Carolina, University of	1934-1935
South Dakota, University of	1934-1935
Syracuse University	1933-1934
Temple University	1934-1935
Tennessee, University of	1934-1935
Texas, University of	1934-1935
Toronto, University of	1934-1935
Tufts College	1934-1935
Tulane University of Louisiana	1934-1935
Utah, University of	1934-1935
Vanderbilt University	1934-1935
Vermont, University of	1934-1935
Virginia, Medical College of	1934-1935
Virginia, University of	1934-1935
Washington University, St. Louis	1934-1935
Wayne University	1934-1935
Western Ontario, University of	1934-1935
Western Reserve University	1934-1935
Wisconsin, University of	1934-1935
Total, 60	

The relative recognition of this latest "specialty" was determined by contrasting the number of allergy courses with the number of such other medical subdivisions as cardiovascular disease, gastro-intestinal disorders, endocrinology and metabolism (table 4). A comparison of the number of schools mentioning these five subdivisions to the total number of announcements received gives the percentage of mention of these courses. These results are tabulated in the third column. The ratio of the mention of allergy to the mention of each of the other medical subdivisions is expressed in the last column and is termed the index of allergy recognition. A glance at these relationships shows that the four other subdivisions are

Read before the Chicago Society of Allergy, May 20, 1935.
From the Children's Allergy Section, Mandel Clinic of Michael Reese Hospital, aided by the Jessie Werthamer Fund.

mentioned in 89 per cent or more of the catalogues, while allergy rates 24 per cent. It is readily understood that the index of allergy must approximate a constant. In this case the index of allergy is about 25 per cent. This means that the allergy discrepancy is real, since the other groups receive equal and almost unanimous recognition in the field of undergraduate medical teaching.

that the purpose of a course in allergy should be to acquaint the student with its manifestations, to give him some idea of how the specific etiology is determined, and to acquaint him with methods and treatment not only including specific inoculations but also the general care of the patient, his environment and his diet. The outpatient department should furnish patients to be used as texts and demonstrations before the class.

TABLE 3.—*Analysis of Courses in Allergy in Schools with Announcement Listings*

Medical School	Year Course Given	In Department of	Size of Class	Elective or Required	Number of Hours	Name and Rank of Teacher
Baylor University..... 1934-1935	4th	Medicine	Entire	Required	6	James H. Black, professor of preventive medicine
Chicago, University of..... 1934-1935	....	Medicine	Lecture	Elective	½ c. 2 weekly	H. L. Huber, associate clinical professor of medicine
Columbia University..... 1934-1935	3d and 4th	Clinic at Presbyterian Hospital	Two students each morning, 4 mornings weekly	.....	.....	F. A. Stevens, associate in medicine
	4th	Clinical clerkship in Allergy Clinic; Dermatology		Elective	To be arranged	B. M. Kesten, associate in dermatology
Cornell University..... 1934-1935	....	Medicine	Special clinic ⅛ of class	Elective	.....	
Duke University..... 1934	4th	Allergy	.....	Required	5½ weeks	
Georgetown University..... 1934-1935	3d	Medicine	Lecture	.....	4	G. T. Brown, instructor in clinical medicine
Hahnemann Medical College... 1934-1935	3d	Supplement to a course in medicine	Entire	Required	.....	Morris Fiterman, lecturer in medicine
Harvard University..... 1932-1933	4th	Medicine	.....	Elective (course in bacterial allergy)	12 clock hours	C. L. Derick, assistant professor of medicine
Illinois, University of..... 1934-1935	4th	Medicine	Lecture, 12 students	Elective	8	Tell Nelson, associate in medicine
			Clinic	.....	8	B. Z. Rappaport, associate in medicine
Louisiana State University.... 1934-1935	3d	Medicine	Entire; Clinic and Lecture	Required	16	N. F. Thiberge, assistant professor of clinical medicine
Michigan, University of..... 1934-1935	3d	Medicine	Lecture (2 weekly), entire class	Required	9 weekly	William E. Sheldon, instructor in medicine
		University Hospital sensitization clinic		Elective	68 clock hours	D. M. Cowie, professor in pediatrics and infectious diseases, and Buenaventura Jimenez, instructor in pediatrics
New York Homeopathic Medical College and Flower Hosp. 1934-1935	....	Arthritis and allergy dept. at Flower Hospital	.....	.....	.....	E. R. Eaton, associate attending physician
New York University..... 1934-1935	4th	Medicine	Lecture clinic, 2 students	Elective	2	Aaron Brown, instructor in medicine
Ohio State University..... 1934-1935	4th	Medicine	Lecture, 1 weekly for 1 quarter	.....	1 credit hour	Johnathon Forman, lecturer on allergy
Oregon, University of..... 1934-1935	4th	Medicine, but held in Children's Hospital	Lecture	Elective	11	R. L. Benson, attending physician in allergic diseases at Doernbecher Memorial Hospital for Children
Rochester, University of..... 1934-1935	4th	Pediatrics	Entire	Required	6	Jerome Glaser, instructor in pediatrics
	4th, 1st and 2d semesters			Required	6	S. S. Bullen, assistant professor of medicine
Southern California, University of 1934-1935	4th	Medicine	Entire, part of work in outpatient dept.	Required	.....	
Stanford University..... 1934-1935	2d	Bacteriology and experimental pathology	Laboratory	Elective	.....	
Yale University..... 1934-1935	4th	Pediatrics	1 student in 3d quarter, 2 students in 4th quarter	Elective	10	Jerome Trask, associate professor in pediatrics
		Total 19				

COMMENT

The status of allergy as it manifests itself throughout the country appears to indicate that the emphasis on the teaching of this subject is largely the product of the personality of that faculty member pursuing allergy as a specialty or as an adjunct to his clinical armamentarium. In line with this phenomenon, the courses vary in scope and in intensity. It is not my intent in this review to suggest how allergy should be taught. Nevertheless it must be stated that the teaching of allergy in a busy outpatient clinic is usually unsuccessful because the urgent press of work leaves little time to devote to students. It would seem

SUMMARY

1. This review concerns itself solely with the scope of the published statements concerning allergy courses in the current medical school announcements.

2. It is conceded that more attention is probably paid to allergy than is indicated in these publications.

3. This analysis may stimulate allergists engaged in medical teaching to add or revise the statements published in their medical school announcements. Revision will complete the facts and will give a more accurate status to undergraduate instruction in allergy.

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4. The varied nomenclature and descriptions of courses that were typically observed in the study of the allergy group prompts the suggestion that the association of medical schools take under advisement the feasibility of standardizing the descriptions of all courses so that the following facts may become uniformly available: the department under which the course operates, the year in which the course is offered, the amount of credit, elective or required, size of class, total hours

TABLE 4.—*The Index of Allergy Recognition*

Subjects	Total Mentions	Percentage of Mention	Allergic Index, per Cent
Allergy	19	24	..
Cardiovascular	76	96	25
Metabolism	76	96	25
Gastro-intestinal	72	91	26
Endocrinology	70	89	27
Number of catalogues	79		

devoted, and rank of instructor. Other data naturally will vary with the school; i. e., more complete description of the courses, hours and days of the week, and location of the classroom.

5. A supplemental study may well be undertaken by the questionnaire method to fill in the details omitted from the catalogues.

6. The present review fulfils its fundamental purpose in portraying the present status of undergraduate allergy teaching as indicated in the current medical school announcements.

Medicolegal

Malpractice: Compensation Award as Bar to Malpractice Action.—During the course of his employment, the worker sustained simple fractures of the radius and humerus of the right arm. Allegedly because of the negligence of his attending physician and of the hospital wherein he had been confined, the fractures did not heal and it was necessary to amputate the arm approximately six inches below the shoulder socket. The Oklahoma industrial commission awarded him compensation for the total loss of his right arm. Thereafter he brought suit against the physician and the hospital. He contended that he was entitled to maintain this action, not for the physical injury caused him through the negligence and unskilfulness of the defendants, which he admitted was barred by the award of the industrial commission, but for physical pain and mental suffering caused by the negligence of the defendants, since the workmen's compensation act makes no provision for an award for physical pain and mental suffering. There was a judgment for the defendants, and the plaintiff appealed to the Supreme Court of Oklahoma.

The question presented, said the Supreme Court of Oklahoma, has been definitely settled heretofore by this court. A worker is entitled to receive compensation through the industrial commission for an injury sustained in the course of his employment. The award includes compensation for the original injury and for the ultimate results of such injury, including the carelessness or negligence of the physician or hospital selected by the employer. Under the workmen's compensation act of Oklahoma, also, the award is based in part on suffering and mental anguish of the injured workman. There is but one exception to be noted among the Oklahoma decisions. In *Walker* v. *Von Wedel*, 108 Okla. 292, 237 P. 86, the court allowed a recovery by an injured workman against the physician after an award had been made by the industrial commission and accepted by the workman, but in that case the workman charged that the acts of the physicians were "maliciously performed in an unskilful manner, which resulted in the unnecessary bodily suffering and mental anguish." In this case, however, there is no charge of maliciousness or wantonness, but the plaintiff predicated his case solely on negligence.

The court accordingly affirmed the judgment in favor of the defendants.—*Alexander v. Von Wedel (Okla.), 37 P. (2d) 252.*

Workmen's Compensation Acts: "Malingerer" Defined.—In the course of his employment, the worker was standing on a dump car loaded with beets. When the trap door at the bottom of the car was opened he fell to the bottom, landing astride an iron beam, with his right leg caught and doubled back in a jackknife position, and with about four feet of beets, weighing several tons, on top of him. His principal injury consisted of two broken vertebrae. He was hospitalized for several weeks and was fitted with a steel brace to hold his spine rigid, which he wore for about ten months. Thereafter he used crutches. According to his testimony, any twist or jar gave him intense pain, he could not stand on his feet and stoop forward, and he spent about half the time in bed. The compensation commissioner awarded him compensation for total and permanent disability and the award was affirmed by the district court, Scotts Bluff County. The employer then appealed to the Supreme Court of Nebraska.

The employer contended that the worker was a malingerer. Malingering, said the Supreme Court, as applied to compensation cases, may be defined as a deception by feigning, inducing, or prolonging either sickness or injury so as to secure undeserved compensation. In this case, roentgenograms clearly indicated that there was an injury to two vertebrae following the accident. Medical witnesses, called by the employer, testified that the worker was a malingerer and that at the time of the trial he was free from any pain. The worker flatly denied the charge. Since the accident, continued the court, the worker had done no work, had spent a great deal of time in bed, was hardly able to hobble about on crutches, and acted as if he were suffering pain. The trial court observed the workman move about the court room, observed his demeanor under examination, was enabled to detect his reaction, if any, to the charge that he was a malingerer, and could weigh the credibility of the neighbors and relatives as they testified to his everyday conduct in respect to his injury. The trial court rejected the opinion of the medical experts that he was a malingerer, and the Supreme Court found nothing in the record to justify interference with that finding. Judgment in favor of the worker was therefore affirmed.—*Great Western Sugar Co. v. Hewitt (Neb.), 257 N. W. 61.*

Society Proceedings

COMING MEETINGS

American Academy of Ophthalmology and Otolaryngology, Cincinnati, Sept. 14-20. Dr. William P. Wherry, 107 South 17th Street, Omaha, Executive Secretary.

American Association of Obstetricians, Gynecologists and Abdominal Surgeons, Sky Top, Pa., Sept. 16-18. Dr. James R. Bloss, 418 Eleventh Street, Huntington, W. Va., Acting Secretary.

American Clinical and Climatological Association, Princeton, N. J., Oct. 21-23. Dr. Francis M. Rackemann, 263 Beacon Street, Boston, Secretary.

American Congress of Physical Therapy, Kansas City, Mo., Sept. 9-12. Dr. Nathan H. Polmer, 921 Canal Street, New Orleans, Secretary.

American Hospital Association, St. Louis, Sept. 30-Oct. 4. Dr. Bert W. Caldwell, 18 East Division Street, Chicago, Executive Secretary.

American Public Health Association, Milwaukee, Oct. 7-10. Dr. Reginald M. Atwater, 50 West 50th Street, New York, Executive Secretary.

American Roentgen Ray Society, Atlantic City, N. J., Sept. 24-27. Dr. E. P. Pendergrass, 3400 Spruce Street, Philadelphia, Secretary.

Association of Military Surgeons of the United States, New York, Oct. 3-5. Dr. H. L. Gilchrist, Army Medical Museum, Washington, D. C., Secretary.

Colorado State Medical Society, Estes Park, September 5-7. Mr. Harvey T. Setthman, 537 Republic Building, Denver, Executive Secretary.

Delaware, Medical Society of, Wilmington, Oct. 8-9. Dr. William H. Speer, 917 Washington Street, Wilmington, Secretary.

Indiana State Medical Association, Gary, Oct. 8-10. Mr. T. A. Hendricks, 23 East Ohio Street, Indianapolis, Executive Secretary.

Kansas City Southwest Clinical Society, Kansas City, Mo., Oct. 7-10. Dr. Ralph R. Coffey, 1103 Grand Avenue, Kansas City, Mo., Secretary.

Kentucky State Medical Association, Louisville, Sept. 30-Oct.3. Dr. A. T. McCormack, 532 West Main Street, Louisville, Secretary.

Michigan State Medical Society, Sault Ste. Marie, Sept. 23-25. Dr. Burton R. Corbus, 313 Metz Building, Grand Rapids, Acting Secretary.

Mississippi Valley Conference on Tuberculosis, Madison, Wis., Sept. 12-14. Mr. A. W. Jones, 613 Locust Street, St. Louis, Secretary.

Nevada State Medical Association, Elko, Oct. 25-26. Dr. Horace J. Brown, 120 North Virginia Street, Reno, Secretary.

Ohio State Medical Association, Cincinnati, Oct. 2-4. Mr. C. S. Nelson, Hartman Theatre Building, Columbus, Executive Secretary.

Oregon State Medical Society, Gearhart, Sept. 19-21. Dr. Blair Holcomb, Stevens Building, Portland, Secretary.

Pennsylvania, Medical Society of the State of, Harrisburg, Sept. 30-Oct. 3. Dr. Walter F. Donaldson, 500 Penn Avenue, Pittsburgh, Secretary.

Utah State Medical Association, Logan, September 5-7. Dr. George N. Curtis, Judge Building, Salt Lake City, Secretary.

Virginia, Medical Society of, Norfolk, Oct. 15-17. Miss A. V. Edwards, 1200 East Clay Street, Richmond, Secretary.

Wisconsin, State Medical Society of, Milwaukee, Sept. 17-20. Mr. J. G. Crownhart, 119 East Washington Avenue, Madison, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to THE JOURNAL in continental United States and Canada for a period of three days. Periodicals are available from 1925 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Journal of Psychiatry, New York

91: 1215-1486 (May) 1935

Psychic Manifestations Associated with Hyperthyroidism. H. F. Dunlap and F. P. Moersch, Rochester, Minn.—p. 1215.

Studies of Urinary Excretion of Gonadal Stimulating Substance in Mental Patients. M. M. Harris, E. Brand and L. E. Hinsie, New York.—p. 1239.

Psychoses of Myxedema. L. J. Karnosh and R. E. Stout, Cleveland. —p. 1263.

*Therapeutic Effects of Estrogenic Hormone Preparations in Certain Cases of Idiopathic Epilepsy and in Migraine. R. W. Whitehead and E. E. McNiel, Denver.—p. 1275.

Comparative Study of Some of the Changes Produced by Various Types of Drugs in Schizophrenic Patients. E. F. Gildea, H. E. Himwich, O. E. Hubbard and J. F. Fazekas, New Haven, Conn.—p. 1289.

Psychiatry and the Juvenile Delinquent. W. Healy, Boston.—p. 1311.

Symptoms of Loss of Feelings: Gestalt Interpretation. H. K. Johnson, Kings Park, N. Y.—p. 1327.

Alcohol Injected Intravenously: Some Psychologic and Psychopathologic Effects in Man. H. W. Newman, San Francisco.—p. 1343.

Psychotherapy in State Hospitals. A. P. Noyes, Howard, R. I.—p. 1353.

Food Service in Institutions of the New York State Department of Mental Hygiene. P. Smith, New York.—p. 1367.

Medical Approach to the Study of Behavior Disorders of Children: Critical Analysis of One Thousand Cases Studied at the Child Guidance Home. L. A. Lurie, Cincinnati.—p. 1379.

*Blood Glutathione (GSH) Level in Mental Diseases. A. T. Brice Jr., Palo Alto, Calif.—p. 1389.

Study of Value of Bancroft's Views on Mental Disease. P. G. Schube, Boston.—p. 1403.

Concerning Improvement of Psychiatric "Prolonged Sleep" Treatment. M. Cloetta and H. W. Maier.—p. 1409.

Juvenile Paretic Neurosyphilis Studies: VII. Descriptive Mental Picture. W. C. Menninger, Topeka, Kan.—p. 1413.

Reticulo-Endothel: Its Status in Certain Psychoses. G. M. Davidson, Ward's Island, N. Y.—p. 1433.

Effects of Estrogenic Preparations in Idiopathic Epilepsy.—Whitehead and McNiel treated eighteen cases of epilepsy with different estrogenic substances. The usual dosage of one estrogenic substance given was fifteen drops three times a day, orally administered. Dosages as high as sixty drops were tried in some cases with no apparent difference in effect. Some of the patients were carried on a dosage of ten drops twice daily. Another estrogenic substance was given subcutaneously, usually from 1 to 2 cc. three times a week for the week preceding and the week following menstruation. One estrogenic substance was given orally, one capsule twice daily for five days, starting two days prior to the expected menstrual period. Some of the patients were allowed to take small doses of phenobarbital in addition to the hormone therapy. Marked relief occurred in eight female patients. Partial benefit was obtained in five other patients, three of whom were males. Two female and one male patient failed to respond. The author also treated twelve patients who had migraine (eleven females and one male) with estrogenic substance. Six female patients had marked relief and three had partial relief. Of the eleven female patients, all but two showed a definite relationship of the attacks to the menses. Several of the patients had polyuria, some noticed an increase in weight, and a number reported an increased feeling of well being. Two patients reported partial relief from symptoms usually associated with the climacteric. The possible rationale of the treatment is discussed. Alteration in the water balance produced by the autacoids used appears to be the most likely mechanism by which they were effective. The change that occurs normally at menstruation in the blood cholesterol might favor the development of seizures in the epileptic patient at menstruation, especially if that individual also had a tendency to develop an elevated blood lecithin. The fact that ovarian deficiency is accompanied by lowered blood calcium suggests a possible relationship between the latter and convulsive seizures. The authors feel that their results warrant further investigation in this field.

Blood Glutathione Level in Mental Diseases.—Brice states that there appears to be a statistically highly significant difference in the blood glutathione level between groups of mental patients and adequate individuals. This difference is greatest in catatonic dementia praecox. It is also marked in hebephrenic and paranoid forms of dementia praecox, and in dementia paralytica. It is less marked but still statistically significant in manic-depressive psychosis. In the small number of cases of epilepsy examined it was not statistically significant. Diurnal variation and exercise have been ruled out as influences affecting the validity of conclusions based on the data accumulated in this study.

Archives of Surgery, Chicago

31: 1-174 (July) 1935

*Effect of Fundusectomy on Acidity of Gastric and Duodenal Content: Experimental Study. J. R. Watson, Pittsburgh.—p. 1.

Wound Healing After Anterior Gastro-Enterostomy: II. Fate of Mucosal Inclusions and Their Prevention: Description of New Suture Technic: Experimental Study in Dogs. K. H. Martzloff and G. R. Suckow, Portland, Ore.—p. 10.

Eventration of Diaphragm: Report of Two Cases. J. A. Reed and D. L. Borden, Washington, D. C.—p. 30.

Acute Appendicitis in Dogs: Experimental Study. E. R. Schmidt and A. C. Taylor, Madison, Wis.—p. 65.

Experimental Burns: I. Rate of Fluid Shift and Its Relation to Onset of Shock in Severe Burns. H. N. Harkins, Chicago.—p. 71.

*Study of Disruptions of Abdominal Wounds. A. H. Milbert, New York.—p. 86.

So-Called "Liver Death": Clinical and Experimental Study. F. F. Boyce and Elizabeth M. McFetridge, New Orleans.—p. 105.

Sequels of Peptic Ulcer Following Medical and Surgical Treatment. J. W. Hinton, New York.—p. 137.

Fifty-Seventh Report of Progress in Orthopedic Surgery. J. G. Kuhns, E. F. Cave, S. M. Roberts, J. S. Barr and R. J. Joplin, Boston; J. A. Freiberg, Cincinnati; J. E. Milgram, New York, and R. I. Stirling, Edinburgh, Scotland.—p. 151.

Effect of Fundusectomy on Gastric Acidity.—Watson produced experimentally gastric and duodenal fistulas in five dogs. The duodenal fistula was placed on the anterior surface of the second portion of the duodenum at the level of the head of the pancreas, while the gastric fistula was placed on the anterior surface of the stomach in the region of the antrum or high on the cardia. Two series of control experiments were done. The dogs were made to fast eighteen hours. The maximal response in gastric acidity as well as changes in the hydrogen ion concentration of the duodenal content were noted in all five animals after the feeding of 100 Gm. of raw meat and after subcutaneous injection of 1 mg. of histamine. Aspirations of the gastric and duodenal content were made every hour in the experiments in which a meat meal was used and every fifteen minutes in the experiments in which histamine was used, and aspirations at these intervals were continued until the readings had returned to approximately the value during fasting. A sufficient amount of gastric content was aspirated each time to permit the determination of values for free acid and for total acidity. Titrations were run against tenth-normal sodium hydroxide, with Töpfer's reagent and phenolphthalein as indicators. Each experiment was repeated a sufficient number of times to determine the normal range of reaction. The emptying time of the stomach of each animal was determined with 250 cc. of a 20 per cent mixture of barium sulphate in water and observations under the fluoroscope at intervals until the stomach was empty. After a reliable set of results had been obtained in the control experiments, a second operation was performed in which most of the greater curvature of the stomach and varying amounts of the fundus ranging from one half to four fifths of the total fundus were resected. The cardia, antrum and lesser curvature were left intact. The experiments with the meat and with histamine were repeated from two to seven weeks and from fifteen to eighteen weeks after the operation, and the results were compared with those obtained in the control experiments. Alterations in gastric acidity as determined by changes in the hydrogen ion concentration were very slight, while alterations in the hydrogen ion concentration of duodenal content were

rarely seen. Definite reductions in both concentration of free acid and total acidity were noted immediately after operation in those dogs in which extensive resection was performed, but in subsequent observations at the end of four months the changes were less marked.

Study of Disruptions of Abdominal Wounds.—Milbert studied a series of 1,560 laparotomies in an effort to arrive at a clearer understanding of the mechanism of the production of disruption in abdominal wounds. He dwells on the broader aspects of the problem, elaborating on the phases of the healing of wounds, the usage and fate of catgut and a consideration of intra-abdominal variations in pressure. Too little consideration has been given to the study of intra-abdominal pressure. Most cases of disruption of abdominal wounds represent a failure of the suture line to hold, whether this is due to the suture material or to abuse, in the face of undue intra-abdominal pressure. Without the added factor of excessive abdominal pressure, many inherently weak wounds may escape disruption. The solution lies in the minimizing of the disruptive forces and in the more prevalent use of nonabsorbable, removable sutures, the effect of which is to tide a healing wound over its early period of weakness. The author does not attribute any etiologic importance to age, sex, seasonal incidence, primary illness or allergic phenomena. He believes that the newly awakened interest in the subject will lead to a revaluation of the present accepted methods of the closure of wounds and to a closer scrutiny of the efficacy of absorbable suture material and of the surgeon's security in using it in the closure of a laparotomy wound.

Arkansas Medical Society Journal, Fort Smith

32: 33-46 (July) 1935

Further Observations in Transurethral Prostatic Resection. H. F. H. Jones and T. D. Brown, Little Rock.—p. 33.
Appendicitis in Childhood. E. Rosamond, Memphis, Tenn.—p. 35.

Johns Hopkins Hospital Bulletin, Baltimore

56: 305-372 (June) 1935

Jaundice Produced by Diverticulum of Duodenum. W. M. Nicholson, Baltimore.—p. 305.
*Plasma Cell Partition of Blood Lead in Clinical Lead Poisoning. H. Blumberg, Baltimore, and T. F. M. Scott, New York.—p. 311.
Researches on Tetanus: III. Further Experiments to Prove That Tetanus Toxin Is Not Carried in Peripheral Nerves to Central Nervous System. J. J. Abel, B. Hampil and A. F. Jonas Jr., Baltimore.—p. 317.
Studies on Virus Problems: II. Cultivation Methods: Development of Antibodies, in Particular, Antiviral Body. J. C. G. Ledingham, London, England.—p. 337.
Relation of Cushing Syndrome to Pars Intermedia of Hypophysis. W. G. MacCallum, T. B. Futcher, G. L. Duff and R. Ellsworth, Baltimore.—p. 350.

The Blood Lead in Clinical Lead Poisoning.—Blumberg and Scott studied the plasma cell partition of blood lead in eighteen cases of clinical lead poisoning by spectrographic analyses of the separated fractions from oxalated, citrated and heparinized samples, as well as by analyses of serum and clot. The results showed that by far the greater part (usually about 90 per cent) of the lead appeared to be carried by the cells or clot. Analyses of control bloods, including a hemophilic sample, indicated that the cell fraction contained at least half, and usually much more, of the trace of nonpathologic blood lead. Washing the cells twice with an isotonic solution of sodium chloride failed to remove appreciable quantities of the lead, thus demonstrating that the lead and the red cells were in comparatively firm combination.

Journal of Industrial Hygiene, Baltimore

17: 121-184 (July) 1935

Electric Welding: I. Respiratory Hazard. A. C. Titus, H. Warren and P. Drinker, Boston.—p. 121.
Id.: II. Acute Fatal Pneumonia Following Electric Welding of Galvanized Iron in Confined Space. F. L. Williman, Washington, D. C.—p. 129.
Id.: III. Prevention of Respiratory Hazard. P. Drinker, H. Warren and R. Page, Boston.—p. 133.
Industrial Dermatoses: Treatment and Legal Aspects: Review of Recent Literature. J. G. Downing, Boston.—p. 138.
Photographic Dust Counter for Industrial Health Purposes. J. B. Ficklen and L. H. Ott, New Haven, Conn.—p. 164.
Silicon Dioxide Content of Lungs of Infants and of Placental Tissue. W. D. McNally and W. L. Bergman, Chicago.—p. 171.

Journal of Nervous and Mental Disease, New York

82: 1-124 (July) 1935

Experimental Analysis of Functions of Frontal Association Areas in Primates. C. F. Jacobsen, J. B. Wolfe and T. A. Jackson, New Haven, Conn.—p. 1.
Ameliorative Effects of Therapeutic Castration in Habitual Sex Offenders. A. W. Hackfield, Seattle.—p. 15.
Chaucer's Nervous Depression. R. L. Pitfield, Germantown, Pa.—p. 30.
Facial Hemiatrophy Associated with Epilepsy: Report of Case. Dorothy E. Donley, Baltimore.—p. 33.
Hypophyseal Cachexia (Simmonds' Disease) with Atrophy of Anterior Lobe of Pituitary Gland: Report of Case. L. Gunther and C. B. Courville, Los Angeles.—p. 40.

Kentucky Medical Journal, Bowling Green

33: 299-342 (July) 1935

*Thyroidectomy for Endemic Goiter. B. B. Baughman, Frankfort.—p. 300.
Primary Tumors of Bones. W. P. Sights, Paducah.—p. 304.
Some Urinary Infections in Children. J. T. Bate, Louisville.—p. 311.
Some Newer Aspects of Arthritis. A. C. McCarty, Louisville.—p. 314.
Survey of Obstetric Work in Louisville Hospitals During 1933. W. T. McConnell, Louisville.—p. 323.
Pulsating Exophthalmos in Infancy. A. O. Pfingst, Louisville.—p. 327.
Relation of Trauma to Diseases of Nervous System. J. J. Moren, Louisville.—p. 331.
Pseudohypertrophic Muscular Paralysis or Muscular Dystrophy. P. F. Barbour, Louisville.—p. 339.
Arachnidism, or Spider Poisoning. M. H. Thompson, Louisville.—p. 340.

Thyroidectomy for Endemic Goiter.—Baughman believes that the symptoms, diagnosis and treatment of simple colloid goiter and exophthalmic goiter are generally known and agreed on. The surgical removal of the toxic adenoma is somewhat hazardous, because patients usually wait until serious cardiovascular damage has taken place. Endemic goiter without an elevated basal metabolic rate or other signs of hyperthyroidism presents definite symptoms; namely, palpitation, dyspnea, nervousness, a sense of pressure, loss of weight, muscular weakness and irritability. All manner of cardiac abnormalities may be present with a normal basal metabolic rate. They are constantly present and to a more marked degree in the toxic adenoma. Myxedema is practically never associated with endemic goiter and rarely occurs after thyroidectomy for this type of goiter. This is shown by a comparison of metabolic rates taken before and after operation. The nontoxic adenoma should not be removed before the age of 21 unless there are definite signs of malignancy, because of the possibility of recurrence. The nontoxic adenoma should be removed because of the certain development of cardiovascular damage later in life and because of the possibility of malignant degeneration, which occurs in about 6 per cent of goiters irrespective of the age of the patient. It should also be removed for the relief of pressure symptoms. A small single adenoma may be resected, but in multiple adenomas or uniform enlargement of both lobes a bilateral subtotal resection should be done.

Laryngoscope, St. Louis

45: 489-572 (July) 1935

Upper Respiratory Tract and Some of Their Complications: Relationship Between Infections of Upper Respiratory Tract and Ear. J. G. Dwyer, New York.—p. 489.
Id.: Upper Respiratory Infections from Pediatric Standpoint. L. C. Schroeder, New York.—p. 493.
Id.: Endoscopy in Treatment of Diseases of Upper Respiratory Tract. J. D. Kernan, New York.—p. 499.
Cough Considered from Otolaryngologic Point of View. L. H. Clerf, Philadelphia.—p. 505.
Injection of Iodized Oil into Bronchial Tree: Passive Method Through Nose. H. M. Goodyear, Cincinnati.—p. 511.
Injection of Sphenopalatine Ganglion. S. L. Ruskin, New York.—p. 515.
Use of Ultra Short Waves in Sinus Therapy. C. K. Gale, New York.—p. 520.
Atrophic Rhinitis-Ozena, with Especial Reference as to Treatment. P. S. Stout, Philadelphia.—p. 526.
Vocal Nodules and Crossed Arytenoids. W. A. C. Zerffi, New York.—p. 532.
Present Status of Mastoidectomy. W. C. Bowers, New York.—p. 535.
Hemolytic Streptococcus Meningitis of Otitic Origin: Operation, Recovery. A. J. Cracovaner, New York.—p. 541.
Relation Between Short Auditory Memory Span Disability and Disorders of Speech. S. D. Robbins, Boston.—p. 545.
Use of Undenatured Bacterial Antigen (Krueger). D. R. Womack, New Orleans.—p. 554.

Missouri State Medical Assn. Journal, St. Louis

32: 261-312 (July) 1935

Value of Ionization in Treatment of Certain Forms of Allergy. A. M. Alden, St. Louis.—p. 261.
Bronchoscopy: Some Observations with Case Presentations. J. S. Knight, Kansas City.—p. 264.
Gas Gangrene: Clinical Study of the Welch Bacillus (Clostridium Welchii). S. A. Grantham Jr., Joplin.—p. 273.
Lead Amblyopia with Cataract from Same Source: Report of Case. J. W. Sherer, Kansas City.—p. 275.
Heterophile Antibodies in Acute Infectious Mononucleosis. H. Agress, St. Louis.—p. 277.
Trauma of Urinary Tract: Three Illustrative Cases. H. M. Young, Columbia.—p. 279.
New Growth of Descending Colon and Upper Part of Sigmoid Flexure: Etiologic Factor in Cause of Acute Intestinal Obstruction. F. J. Smith, St. Louis.—p. 283.

Nebraska State Medical Journal, Lincoln

20: 241-280 (July) 1935

Congenital Diaphragmatic Hernia in Infant with Successful Operation. J. Weinberg and H. Hamilton, Omaha.—p. 241.
Everyday Pediatrics. E. S. Wegner, Lincoln.—p. 244.
*Primary Carcinoma of Lung: Pathologic and Clinical Study Based on Eighty Cases. J. M. Neely, Lincoln.—p. 247.
Aberrant Pancreatic Tissue of Stomach with Surgical Removal. R. R. Best, Omaha.—p. 252.
Case Studies in Goiter No. VIII: Fixed Fibrillation Accompanying Hyperthyroidism. A. Brown, Omaha.—p. 253.

Primary Carcinoma of Lung.—Neely studied eighty case histories in which primary carcinoma of the lung occurred over a period of twenty-one years. He attempted to correlate the pathologic observations with the clinical data and to ascertain whether or not any conclusions could be drawn concerning prognosis. He found that the increased incidence of primary carcinoma of the lung is more apparent than real. The only proved source of origin of primary carcinoma of the lung is the bronchial mucous membrane. Primary carcinoma of the lung affects males only slightly more than females, and the age incidence corresponds with that of carcinoma in general. No more is known about the etiology of primary carcinoma of the lung than is known about carcinoma in general. Pulmonary carcinoma is found in the two lungs with about equal frequency. Distant metastases occurred in twenty-seven of the eighty cases reported and bore no relation to a gross or microscopic type of tumor. The basal cells of the bronchial mucosa are probably the cells from which all carcinomas of the lung arise. Metaplasia of the bronchial mucous membrane is found in all types of carcinoma and is not necessarily a forerunner of squamous cell carcinoma. Primary sarcoma of the lung probably does not exist. If it does exist, it must be extremely rare. Small cell or anaplastic carcinoma of the lung shows a marked tendency to involvement of the mediastinum. Primary mediastinal tumors other than lymphosarcoma, malignant thymoma and the lymphoblastoma group are secondary small cell carcinomas originating in the lung or some other distant focus. The round cell sarcomas or the oat cell tumors are included in this group. Massive mediastinal involvement and other secondary lesions may arise from a small and obscure primary focus in the lung. Of thirty-nine cases showing mediastinal involvement, nineteen were small cell carcinomas. Metastatic lesions in primary carcinoma of the lung may be the cause for the presenting symptom without pulmonary symptoms in many cases. Most endotheliomas of the pleura are in reality primary carcinomas of the lung with pleural involvement.

New England Journal of Medicine, Boston

213: 1-42 (July 4) 1935

The Massachusetts Board of Registration in Medicine. W. P. Bowers, Boston.—p. 1.
Value of Medical Library in Medical Education. L. Davis, Boston. —p. 5.
Community Hospital as a Center of Postgraduate Education. J. H. Pratt, Boston.—p. 7.
Notes on Small Hospital as Center of Postgraduate Education. W. E. Storey, Columbus, Ga.—p. 11.
Internships in Massachusetts Hospitals. C. H. Lawrence, Boston. —p. 11.
Baffling Case of Pulmonary Carcinomatosis. J. C. Edwards, Springfield, Mass.—p. 15.
Effect of Administration of Vitamin C on Reticulocytes in Certain Infectious Diseases: Preliminary Report. J. M. Faulkner, Boston. —p. 19.
Progress in Pediatrics. R. C. Eley, Boston.—p. 20.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

Brain, London

58: 141-322 (June) 1935

Lesions of Central and Peripheral Nervous Systems Produced in Young Rabbits by Vitamin A Deficiency and High Cereal Intake. E. Mellanby.—p. 141.
Effects of Lesions of Dorsal Spinocerebellar Tract and Corpus Restiforme in the Macacus Rhesus Monkey. A. Ferraro and S. E. Barrera. —p. 174.
*Mechanism of Internal Hydrocephalus in Spina Bifida. Dorothy S. Russell and C. Donald.—p. 203.
Pain: Peripheral Pathway. G. K. Stürup and E. A. Carmichael.—p. 216.
Shivering: Clinical Study, with Especial References to Afferent and Efferent Pathways. V. Uprus, G. B. Gaylor and E. A. Carmichael. —p. 220.
Nature of Motor Discharge in Shivering: Note. D. Denny-Brown, J. B. Gaylor and V. Uprus.—p. 233.
Dissociation of Cortical Excitation from Cortical Inhibition by Pyramid Section and Syndrome of That Lesion in the Cat. Sarah S. Tower. —p. 238.
Investigation of Nervous Control of Defecation. D. Denny-Brown and E. G. Robertson.—p. 256.

Mechanism of Internal Hydrocephalus in Spina Bifida.—Russell and Donald examined ten cases of lumbosacral or dorsolumbosacral meningomyelocele. In all a remarkable malformation of the hindbrain was observed. In this a tongue of variable length, consisting of cerebellar tissue and the greatly elongated medulla oblongata, protrudes downward into the spinal canal. It overlaps and compresses the upper segments of the cervical cord, distending the dural theca in this neighborhood and filling the foramen magnum. The cavity of the fourth ventricle extends caudad into this tongue, lying between the cerebellar and medullary components. The maximal diameter of the ventricle is usually within the vertebral canal at and below the level of the foramen magnum, and here too or at a still lower level are found the choroid plexuses and the foramina with which they are associated. The plexuses are sometimes united into one mass, which lies in the middle line in the ventricular cavity. The floor of the ventricle presents the characteristic markings of the rhomboid fossa, and in the middle line toward its caudal extremity is a minute pore, which provides a horizontal communication between the ventricle and the central canal of the ventrally placed spinal cord. Cross-sections of the brain axis show a somewhat complicated pattern according to the number of structures involved. Other structural abnormalities are commonly found in association with this malformation. The spinal cord appears abnormally small and the cervical roots always run in a cephalic direction to reach their exits through the dura mater. Their cephalic direction decreases as successive segments are examined until, in the upper thoracic region, they are either horizontally or caudally inclined. Hydromyelia is present in a number of consecutive segments in the cervical and thoracic cord. There is a conspicuous hypoplasia of the cerebellum, which is usually composed of a small compact mass lacking differentiation into vermis and lateral lobes. The pons as well as the medulla oblongata is elongated and lacks the characteristic ventral protuberance. The cranial nerve roots arising from the pons and medulla are greatly elongated. This curious malformation was noticed first by Arnold (1894) in a case of spina bifida and was more fully described in the following year by Chiari in a series of seven cases of spina bifida, only one of which was an example of meningomyelocele. A good description in five cases of meningomyelocele was published by Solovtzoff (1901), but perhaps the best and fullest account is that of Gredig and Schwalbe in four cases of meningomyelocele (1907). This lesion is called the Arnold-Chiari malformation. The authors believe that occlusion of the foramen magnum in cases of spina bifida will lead to a damming back of cerebrospinal fluid in the ventricular system and to internal hydrocephalus. It has for long been known that operative removal of the sac in spina bifida is frequently followed by hydrocephalus when this was not present before the operation. The development of hydrocephalus after operative removal of the sac can be simply explained as a decompensatory effect.

The extra absorbing apparatus provided by the sac may be just sufficient to balance the degree of obstruction at the foramen magnum in instances in which such obstruction is not severe. If this is true, operative removal of the sac will disturb this balance and will be followed by the development of internal hydrocephalus. The authors describe a comparable but far less pronounced malformation of the medulla oblongata in a case of lumbosacral meningocele without hydrocephalus. In conclusion, they suggest that a more typical Arnold-Chiari malformation may be the cause of the hydrocephalus that complicates some examples of meningocele.

British Journal of Ophthalmology, London

19: 369-432 (July) 1935

Observations on Human Retina. D. J. Wood.—p. 369.
Ocular Disorders Associated with the Wisdom Tooth. C. B. Henry.—p. 378.
The Trachoma Problem. A. F. MacCallan.—p. 383.
Concretions in Lacrimal Canaliculus Caused by Actinomyces. A. Charlotte Ruys.—p. 385.
Water-Binding of the Retina. J. A. van Heuven and F. P. Fischer.—p. 390.
Three Simple Aids in Refraction Work. F. W. G. Smith.—p. 407.

British Medical Journal, London

1: 1303-1350 (June 29) 1935

The General Practitioner and Mental Conditions. J. R. Rees.—p. 1303.
Etiology of Cancer of Skin, with Especial Reference to Occupation. A. R. Somerford.—p. 1305.
Cancer of Lung: Its Modes of Behavior. F. G. Chandler.—p. 1310.
Hemolytic Streptococcic Leukocidin: Preliminary Report. C. G. Paine.—p. 1311.
Confusional State Associated with Infective Endocarditis. D. Shaw.—p. 1313.
Aids for the Deaf. Phyllis M. Tookey Kerridge.—p. 1314.

Edinburgh Medical Journal

42: 337-392 (July) 1935

*Carcinosarcoma: Study of Microscopic Anatomy and Meaning of Peculiar Cancer. W. F. Harvey and T. D. Hamilton.—p. 337.

Carcinosarcoma.—Harvey and Hamilton refer to their six cases of carcinosarcoma, which they define as a double tumor that is a mixture of carcinoma and sarcoma. Their most important example of carcinosarcoma was a tumor of the hypopharynx probably of esophageal origin. It consisted of a squamous cell carcinoma placed low down and arising from the esophagus or the larynx. Above this and continuous with the stroma of the epithelial tumor was a sarcomatous connective tissue containing one or two islands of solid alveolar, malignant squamous epithelium. At the summit the tumor was without epithelial elements and wholly sarcomatous. The authors believe that the sarcomatous element is a subsequent development to the carcinoma. The sarcomatous development is probably an exaggeration of stroma reaction to invasion by carcinoma. There are tumors both of epidermic and of glandular carcinoma type, which may show aggregations of spindle-shaped epithelial cells with much of the appearance of sarcoma and which may be called spurious carcinosarcoma or carcinoma sarcomatoides. A fibroblastic reaction is not uncommon in primary and secondary carcinoma, which may be very active without being malignant; it may pass over to malignancy and so constitute a carcinosarcoma. It is this transformation of stroma which the authors contend may occur in the case of some carcinomas and is to be separated from granulation tissue and spindle cell carcinoma. The possibility of a predisposition to overgrowth of stroma is one to be considered.

Practitioner, London

135: 1-128 (July) 1935

Radiology and Practical Medicine. L. Hurder.—p. 1.
X-Rays in General Practice. C. Bull.—p. 7.
Value of X-Rays in Diagnosis of Diseases and Injuries of Skull. W. H. Coldwell.—p. 17.
Radiology of Chest Disease. F. G. Wood.—p. 29.
The X-Ray Diagnosis of Abdominal Disease. P. Kerley.—p. 38.
Deep X-Ray Therapy in Malignant Disease. W. M. Levitt.—p. 48.
X-Rays in Skin Diseases. A. M. H. Gray.—p. 59.
Fulguration and Electrodesiccation. E. P. Cumberbatch, note by W. D. Harmer.—p. 71.
Use of Permanent Jejunal Tube in Treatment of Gastric Ulcer. W. Gilges, remarks by F. P. Weber.—p. 83.
Circumcision in Children. T. A. Ward.—p. 88.
Toxic Drugs: Their Use and Misuse. W. Willcox.—p. 97.

Presse Médicale, Paris

43: 1001-1016 (June 22) 1935

Short Wave Diathermy in Gynecology. R. Proust, with Collaboration of R. Moricard and J. Pulsford.—p. 1001.
Larval Leprosy and Granular Forms of Hansen's Bacillus. M. Faure-Beaulieu and Mlle. C. Brun.—p. 1003.
Venous Thromboses, Arterial Obliterations and Gangrene of Extremities. P. Wertheimer and P. Frich.—p. 1004.
*Treatment of Pulmonary Abscess. N. N. Stoichitza.—p. 1008.

Treatment of Pulmonary Abscess.—Stoichitza discusses the medical and surgical methods employed in handling pulmonary abscess. The medical ones are divided into two groups, the true employment of medicaments and the so-called mechanical methods. He has used emetine in twenty-two cases with sixteen failures, three slight improvements and three recoveries. He is therefore far from enthusiastic over this method of treatment. Alcohol intravenously was employed in ten cases with six failures, two slight improvements and two recoveries. Autovaccines have produced only failures and was abandoned in favor of autopyovaccines, which gave two failures, two slight improvements and one recovery. The treatment by medical means, called mechanical, consists of postural drainage, bronchoscopic drainage or drainage by simple expression, the latter being obtained by artificial pneumothorax. By none of those methods were the results materially better than in a group of ten cases treated purely symptomatically. The most important surgical treatment of lung abscess is by phrenicectomy. This was performed on ten of their patients with three failures, four slight improvements and three recoveries. Pneumotomy was done in five cases, with four deaths and one recovery. Although the surgical results were mediocre, it must be emphasized that they were dealing with chronic abscesses, which are almost universally considered less favorable for surgery. There is not yet any treatment definitely superior to the symptomatic.

Schweizerische medizinische Wochenschrift, Basel

65: 633-652 (July 13) 1935

Dangerous Catchwords in Sphere of Heredity. J. Bauer.—p. 633.
New Transport Extension Splint for Fractures of Lower Extremities, Particularly Fractures of Femur. J. Dubs.—p. 635.
Spinal Anesthesia with Tutocain and Nupercaine: Music for Diverting Attention of the Patient Away from Operation. Rusca.—p. 637.
*Treatment of Nasal Fractures. J. Poult.—p. 638.
Chronic Boldine Poisoning in Human Subjects. F. Mainzer.—p. 639.

Treatment of Nasal Fractures.—According to Poult, the reposition of the fractures of the nasal cartilage can be accomplished readily by pressure with the fingers from both sides and, if necessary, with simultaneous hook traction that has its point of attack in the concavities of the anterior portion of the nose. The traction is accomplished best with a blunt double hook that has an inner span of from 5 to 10 mm. The tips of the hook should be padded with cotton. If a fracture of the bony portions of the nose has to be reduced, a wide arterial forceps that is kept closed can be introduced along the nasal floor until the fracture has been reached. The eventually overlapping fragments are then loosened by traction with the double hook. If the vomer also is fractured, it can usually be replaced by traction. Finally, the depression can be lifted from the inside either by opening the forceps or by pressing the closed forceps flat against the depression. In order to retain the fragments in the proper position, the author employs an intranasal support that is made of glass and has the form of a triangle (musical instrument). To guard against asymmetry of the nose, he inserted the support into both nasal cavities, regardless of whether both were injured or not. The nasal support consists of a thick-walled glass tube with an external diameter of 5 mm. Each side of the triangle is about 3 cm. in length and the middle piece measures about 1.33 cm. The inner distance between the two ends is about 3 mm. It is advisable to have a hole in one of the arms of the triangle and to lead a string through this and the tubal opening and knot it above the upper lip, so as to prevent the triangle from slipping backward. The author states that this supporting apparatus was well tolerated by the patients. It was worn for from eight to fourteen days. It permits the discharge of the secretions and in some instances even limited nasal breathing. The author thinks that unless irrigation seems absolutely necessary it may be omitted, for, with the glass support, danger of stasis of the secretion is not great.

Brasil-Medico, Rio de Janeiro

49: 575-596 (June 29) 1935

Brucella Melitensis: Study of Case of Undulant Fever. J. Guilherme Lacorte.—p. 575.
*Bargehr Skin Reaction for Leprosy: Active Immunity and Allergy in Leprosy. P. Cerqueira R. Pereira.—p. 576.
Bismuth Treatment in Acute Angina. Silva Guimarães.—p. 587.

Bargehr Skin Reaction in Leprosy.—Cerqueira Pereira points out that, while children ranging in age from 6 months to 3 years do not give a skin reaction to lepromin, they are susceptible to the infection. Repeated inoculations, however, in small children and adults will give positive results. The intensity of the skin reaction runs parallel to the number of inoculations. Bacilliferous lepers, during the evolution of the disease, may give positive results to the Bargehr skin reaction. The negative results of the test are probably due to the presence of antibodies that develop from a contact of the individual on whom the test is made with lepers. The presence of antibodies in the blood of persons who give positive results with the Bargehr reaction is proved by the positive results obtained in the same persons by the tests of Gomes and Rubino for leprosy. The positive result of the test in persons who have contact with lepers but who do not show any symptoms of leprosy is the manifestation of the presence of allergy and probably of an index of immunity. Therefore, until positive results are obtained with lepromin, repeated inoculations are advisable.

Deutsche medizinische Wochenschrift, Leipzig

61: 1105-1144 (July 12) 1935. Partial Index

Lymphogranuloma Inguinale: Etiology and Therapy. S. Hellerström. —p. 1105.
*Postoperative Development of Omental Tumors. K. Strauss.—p. 1108.
*Prophylaxis of Postoperative Disturbances in Circulation. S. Rusznyák, S. Karády and D. Szabó.—p. 1111.

Postoperative Development of Omental Tumors.—Strauss describes a tumor of the omentum that developed after several abdominal operations. The tumor had grown to fist size within a year. Clinical peculiarities and the rather rapid growth made malignancy seem likely. The tumor was removed and the subsequent histologic examination disclosed a benign, inflammatory tumor of the omentum, the pathogenesis of which could be explained by the preceding operation. The author reviews the literature on postoperative omental tumors, giving especial attention to the type of operation after which they are most frequent, to the length of time that elapses after the operation before they develop, to the rapidity of the development, to the histologic structure and to the erroneous diagnoses to which they may give rise. He gives a detailed report of the patient's history, describes the surgical specimen and discusses the various possibilities of development. He thinks that in this case several factors were involved. He mentions hemorrhagic foci, foreign bodies (suture material) and inflammatory exudates. He thinks that inflammation is the essential causal factor in the development of these tumors. Their radical removal and the severing of all adhesions is necessary in order to counteract the severe clinical manifestations that may be caused by them.

Postoperative Disturbances of Circulation.—Rusznyák and his associates call attention to former reports (see also abstract in THE JOURNAL, June 30, 1934, p. 2241), in which they demonstrated that persons with various disturbances can be classified into distinct groups according to the manner in which their blood pressure reacts to an injection of histamine. They point particularly to the so-called second type, in which an injection of histamine produces a temporary decrease in the blood pressure followed by a considerable increase. Persons in whom this form of histamine reaction results have a predisposition for postoperative collapse. It was the authors' aim to overcome this predisposition. They found that two daily injections of from 0.5 to 1 mg. of histamine, given several days in succession, changes the histamine reaction and the collapse tendency at least for several days. Accordingly they commence, from eight to ten days before the operation, with subcutaneous injections of from 0.5 to 1 mg. of histamine. These injections are given twice daily and are continued until the day of the operation. The authors state that they obtained favorable results with this treatment, for even major surgical interventions were tolerated quite well after the patients who had a tendency to postoperative collapse had been given the prophylactic histamine injections.

Klinische Wochenschrift, Berlin

14: 985-1016 (July 13) 1935. Partial Index

Morphologic Reactions of Blood in Infections. L. Aschoff.—p. 985.
Clinical Hematologic Studies on Differential Diagnosis and Estimation of Occupational Silicosis. G. Schlomka and F. A. Nolte.—p. 987.
Clinical Value of Electrocardiogram with Leads from Thoracic Wall. C. Korth and H. Hecht.—p. 992.
*Water Content of Total Blood, of Plasma and of Erythrocytes. C. Jimenez Diaz, F. Bielschowsky and J. R. Miñon.—p. 995.
Demonstration and Significance of Hemoglobin in Occult Hemorrhages of Gastro-Intestinal Tract. I. Boas.—p. 998.
Physiologic and Pathologic Aspects of Water Tolerance Test. J. Bauer, C. V. Medvei and M. Taubenhaus.—p. 1001.
*Changes in First Heart Sound in Transmission Disturbances. A. de Châtel.—p. 1004.

Water Content of Plasma and of Erythrocytes.—Jimenez Diaz and his collaborators studied the water content of the total blood, of the plasma and of the erythrocytes in fifteen healthy persons and sixty-two patients. They found that the fluctuations in the water content of the entire blood are caused primarily by variations in the ratio of the plasma to the erythrocytes. They stress that the value obtained by determining the dry residue of the blood is inadequate and often misleading. They concede that the water content of the blood may be increased under certain pathologic conditions but that it cannot be decreased. They did not succeed in finding cases of true anhydremia; that is, inspissation of the blood. The water content of the erythrocytes seems to be dependent on three factors: their size, hemoglobin content and age. In healthy persons the water content of the total blood was found to be between 78 and 81 per cent, of the plasma between 90 and 92 per cent and of the erythrocytes between 65 and 68 per cent.

Changes in Heart Sounds.—According to de Châtel, the physical factors that play a part in the production of the cardiac sounds are not fully understood as yet. The author describes a case in which it was possible to explain the abnormality of the systolic sound on the basis of the simultaneous recording of the cardiac sounds and the electrocardiogram. He says that the intensity of the first heart sound is influenced by the respiratory movements and by changes in the rhythm. However, changes in the systolic sound are observable also in transmission disturbances in which the electrocardiogram records changes in the length of the PQ interval. A review of the literature reveals that the intensity of the first heart sound decreases as the transmission time; that is, the PQ interval lengthens. The author says that this rule applies only to cases in which the mitral valves are free from pathologic changes. The patient whose history is reported came to the clinic with the symptoms of acute decompensation. The first electrocardiogram showed sinus rhythm and a myocardial lesion. On the seventh day following the onset of the digitalis therapy the pulse became arrhythmic and the electrocardiogram indicated an atrioventricular block of the ratio of 1:2. Auscultation disclosed at this time that the first heart sound was almost inaudible in every eighth or ninth pulse beat. It was now decided to register the cardiac sounds together with the electrocardiogram. This record revealed that there was not a regular 1:2 block and that a part of the regularly blocked auricular contractions were transmitted with a considerably prolonged transmission time. In this manner there developed in the otherwise regular rhythm an arrhythmia of short duration. The sound record shows plainly that the first sounds that have the essentially smaller deflection correspond to the ventricular beats with the longer transmission time. This tallies with the auscultatory observations. The author explains that the patient had "frustrated contractions" in which, paradoxically, not the pulse beat was lacking but rather the systolic heart sound. This case proves that the contraction of the auricles plays an important part in the development of the first heart sound in that the systolic sound becomes weaker as the transmission time lengthens; that is, the later ventricular systole follows after the auricular systole. The author shows further that in case of valvular lesions the changes in the cardiac sounds are not uniform.

Zentralblatt für Gynäkologie, Leipzig

59: 1633-1680 (July 13) 1935

*Decisive Importance of Determination of Pressure in Cutaneous Vessels in Therapy of Preeclampsia. D. von Raisz.—p. 1634.
*Adrenal Cortex Extract in Treatment of Gestoses. J. Torre Blanco and G. Riesgo del Campo.—p. 1639.
Results of Roentgen Therapy in Puerperal Mastitis in One Hundred and Thirty-Five Cases. H. Theiss.—p. 1644.
Importance of Exploratory Curettage in Preclimacteric and Climacteric Metrorrhagia. A. Schwarz.—p. 1648.
Large Teratoma of Sacrum as Obstruction in Delivery. M. Brenner. —p. 1650.
Congenital Skin Defects of Neck. B. Simkó.—p. 1653.

Pressure in Cutaneous Vessels in Preeclampsia.—Von Raisz endeavored to determine whether in women with preeclampsia there exists a symptom that indicates a threatening eclamptic attack with greater probability than the manifestations that were formerly considered in this connection; namely, the height of the blood pressure, the protein content of the urine, the severity of the edema and the patient's general condition. The author studied the pressure of the cutaneous vessels by means of Herzog's apparatus. In tests in 156 cases he made the following observations: 1. The pressure of the cutaneous vessels in healthy pregnant women is like that in nonpregnant women, 40 mm. of mercury being the average and 50 mm. the maximum. 2. The pressure of the cutaneous vessels of the women who have only pregnancy edema is less than normal; the greater the edema, the lower the pressure. 3. Even in apparently severe preeclamptic conditions, the pregnant or parturient woman remains free from eclamptic attacks if the pressure of the cutaneous vessels does not exceed 50 mm. of mercury. 4. High pressure in the cutaneous vessels indicates that an eclamptic attack is threatening. Whenever the pressure exceeds 60 mm. of mercury, eclampsia is practically certain, but all measures designed to prevent an eclamptic attack should be taken even in cases in which the pressure exceeds 50 mm. The author reports thirteen cases. In a table he shows that edema, protein content and the height of the blood pressure would not have been sufficient to indicate threatening eclampsia but that the pressure of the cutaneous vessels gave a correct indication of the severity of the condition. The author points out that a quick termination of the delivery alone is not sufficient to prevent an eclamptic attack, if the pressure in the cutaneous vessels is high. He stresses the value of venesection as a preventive measure. He thinks that it should be tried first and that the other medicinal and operative measures should be taken only if it does not reduce the abnormally high pressure in the cutaneous vessels.

Adrenal Cortex Extract in Treatment of Gestoses.—A recent report by Stemmler about the use of adrenal cortex extract in the treatment of gestoses induced Torre Blanco and Riesgo del Campo to report an interesting case. The woman, aged 24, had had two normal deliveries, but in both pregnancies she had vomited during the first three months, and during the second pregnancy the vomiting recurred three months before the delivery and persisted until two months after the delivery. When the patient came under the authors' observation, she was in her third pregnancy. She had attacks of vomiting, but she was more annoyed by pyrosis and acidity. She also had occasional attacks of vertigo. These symptoms disappeared and after that the pregnancy took a normal course until one month before expected delivery. At this time severe vomiting, pyrosis and hypersalivation set in and the general condition was poor. The breath smelled of acetone, and examination of the urine disclosed severe acetonuria and the presence of albumin and of biliary pigments. The authors think that the disorders which developed at the end of pregnancy are due to a metabolic disorder, namely, acidosis, the chief cause of which is a deficient liver function and an irregular muscular metabolism, which in turn produces a disturbance in the production of the acetone bodies and a considerable increase in the lactic acid content of the blood. In this connection the authors call attention to the fact that a number of investigators detected a tendency to acidosis not only in the course of gestoses but also during pregnancy. Various factors are involved in the genesis of acidosis, but the increase in the lactic acid content of the blood, which is caused by an abnormal glycogen metabolism in the muscles and by a deficient lactic acid synthesis in the liver, is the most important factor. Since it is known that the adrenal cortex influences the increased lactic acid content of the blood and since water retention, which may be increased by the cortex hormone, was absent, the authors resorted to treatment with adrenal cortex extract and administered three injections, which were well tolerated. The lactic acid content of the blood and the alkali reserve were examined during this time. The vomiting ceased on the first day the treatment was instituted, but the acetonuria persisted. The treatment with adrenal cortex was discontinued and 30 units of insulin and 150 cc. of dextrose were given. This treatment was continued for four days, being given twice on the first two days and once on the other two days. The acetonuria disappeared as soon as insulin was given. Thus the authors succeeded in effecting a separation of the two chief factors of the acidosis, the excessive lactic acid formation in the blood and the formation of acetone bodies. The first of the two factors was counteracted by the adrenal cortex extract and the second by the insulin-dextrose treatment.

Svenska Läkaresällskapets Handlingar, Stockholm

61: 63-180 1935

*Studies on Undulant Fever in Sweden. G. Olin.—p. 63.
Suicide by Blows of Ax on Head: Contribution to Discussion. G. Hultkvist.—p. 169.

Undulant Fever in Sweden.—Olin states that from 1929 to 1933 about 120 cases of undulant fever have occurred annually in Sweden. Of 565 patients, 65.2 per cent were men. Persons in the fourth decade of life were most often affected. A close relation between undulant fever and infectious abortion in cattle was noted. Serologic studies supported the assumption that latent abortive infection with Bang's bacillus occurs in man. Test of 288 persons without history of undulant fever and with little likelihood of exposure to infection gave positive cutaneous reactions in twenty-one, or 7.3 per cent, the reaction being more often positive in adults than in children and in women than in men. The cutaneous reaction was positive in six persons with a history of undulant fever from six months to six years previously and in nine bacteriologists who had been working with Brucella cultures for a longer time without having undulant fever. A marked phagocytosis was found in four of the six and in seven of the bacteriologists. Of 251 attempts at blood culture in undulant fever, 46.2 per cent were positive. Bacteria were more often demonstrable in a highly febrile stage but could occasionally be cultivated from the blood during afebrile periods. In seventy-five cases verified by blood cultures, the results show that agglutination in serum dilution is 1:320 and from 0 to 10 per cent hemolysin in complement fixation tests with 0.1 cc. of serum could be regarded as positive. The agglutination test seemed somewhat more reliable. In 171 cases of undulant fever there was a single fever period in one fifth, there were two or three fever periods in more than one half, and there were four or more fever periods in one fourth. The fever was usually high. The general condition was little affected. The pulse frequency was low in comparison to the temperature. Enlargement of the spleen was found in more than one third of the cases. The diazo reaction of the urine was positive in about one fourth of sixty-four cases. Leukemia appeared in most cases; the percentage of mononuclear elements was generally increased, and slight or moderately increased blood sedimentation was usual, the values generally being lower during the first stage than during the later course and higher during febrile than during afebrile periods. In the six fatal cases the cause of death was mainly pulmonary or circulatory complications. The duration of the disease till disappearance of the fever varied from eight to 532 days, the average duration being 91.5 days. The average convalescence lasted three months. Chemotherapy and vaccine treatment with subcutaneous injection of killed bacteria were both without effect.

CORRECTION

Acid Medication in Treatment of Bacilluria.—In THE JOURNAL, August 3, page 393, in the abstract of the article by Crance and Maloney, the composition of the nitrohydrochloric acid solution should read: 4½ drachms of the acid and enough water to make 4 ounces.